MacWEEK

MONITOR Buyers Guide
MOVING UP TO 20 AND 21 INCHES
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04.29.96 | *The Newsweekly for Macintosh Managers* | VOLUME 10 NUMBER 17

Navigator 3 secures cache, adds OT, QT

By James Staten

Netscape Communications Corp. will unveil the next version of its Navigator Web browser this week at Spring Internet World 96. Version 3.0 will bring enhancements designed to increase Navigator's appeal with IS managers as well as consumers.

In addition, the company will announce an alliance with Apple to make QuickTime and QuickTime Conferencing core technologies in LiveMedia, Netscape's new open standard for cross-platform multimedia.

The first feature-complete public beta of Navigator 3.0 will be released this week for Mac OS and Windows platforms; the final version is due in June. The new browser will be optimized with Open Transport, support the Internet Config extension and deliver improvements in three main areas: security, perfor-

See Navigator, Page 80

Clocking Power towers: CPUs cross 180-MHz line

By Henry Norr

Just a week after Apple's latest speed bump, Power Computing Corp. this week will strike back with five new models of its own, including both the world's fastest Mac OS-compatible single-processor machines and the least expensive PowerPC 604-based systems to reach the market.

REVIEW

Topping the clone maker's spring lineup is the PowerTower 180, a three-slot minitower system with a 180-MHz 604 processor that costs $4,195 in a standard configuration (see chart below). The PowerTower 166, featuring a 166-MHz 604 CPU, is $3,795 in a standard configuration.

Rounding out the list are three entries in a new midrange PowerCenter series, with 604 processors running at 120, 132 and 150 MHz. Prices will start at $1,895 for a 120-MHz system with an unrealistic 8 Mbytes of RAM, an 850-Mbyte hard drive and quadruple-

See PowerTower, Page 33

Power Computing's new Mac clone lineup

CPU	PROCESSOR	CONFIGURATION	PRICE
PowerTower 180	180-MHz 604	16/2GB/4x CD/512K L2/2KB VRAM	$4,195
PowerTower 166	166-MHz 604	16/2GB/4x CD/512K L2/2KB VRAM	$3,795
PowerCenter 150	150-MHz 604	16/1GB/4x CD/256K L2/1KB VRAM	$2,995
PowerCenter 132	132-MHz 604	16/1GB/4x CD/256K L2/1KB VRAM	$2,495
PowerCenter 120	120-MHz 604	8/850/4x CD/256K L2/1KB VRAM	$1,895

ROAD TO WWDC

Apple rolls back Copland releases

DR1 to miss show; developers unfazed

By Clifford Colby and Stephen Howard

Copland is late. Again.

Apple has pushed the release of Copland back to mid-1997. Further, the company expects to announce this week a delay in the first widespread developer release of its new operating system. Developer Release 1, or DR1, which Apple had expected to hand out at the Apple Worldwide Developers Conference in May, will not ship until summer.

"The developer release didn't meet the quality, completeness, performance and memory-size criteria we had set a while ago that would be absolutely, minimally required for developers to do a reasonable amount of work," said Vito Salvaggio, group product manager for Copland.

Salvaggio said Chairman and CEO Gilbert Amelio "is giving us direction on the key areas we need to emphasize in our development. We are discussing the product in the context of the direction he wants to take the company."

Amelio has recently pointed to the Internet as a fulcrum upon which Apple can lift its fortunes.

Salvaggio reiterated that Apple's central goals for Copland

See WWDC, Page 80

Adobe churns out PrintMill for Internet printing tasks

On Demand expo lures Scitex, Xerox

By David Morgenstern

While Adobe Systems Inc. dodged demands for details on its forthcoming Internet printing strategy, other print industry movers and shakers were more forthcoming at last week's On Demand Digital Printing and Publishing Conference and Exhibition. Vendors lined up to unveil new schemes for speeding printing and improving desktop connections with remote output devices.

The New York show highlighted new hardware and software for short-run print jobs. It also provided a forum for distributed printing systems, which transmit print jobs to a remote site, process them automatically, and then distribute or mail them.

See On Demand, Page 80

NEWSPAPER SECOND CLASS

Mac products gravitating to Internet World

By MacWEEK staff

Third-party Mac developers are not waiting for Apple to uncover its Internet strategy as they unveil a raft of new products for the global network at this week's Spring Internet World 96.

At the San Jose, Calif., show Mac loyalists as well as platform newcomers will announce products on the authoring, client and server fronts.

▶ **Authoring.** Net-Scene, a subsidiary of Ron Soferman Image Processing, is developing PointPlus, a $449 Mac utility that converts and compresses Microsoft PowerPoint presentations for use on the Web. A Netscape Navigator plug-in will display the files.

See Internet World, Page 79

Deneba to stretch Canvas with image-editing tools

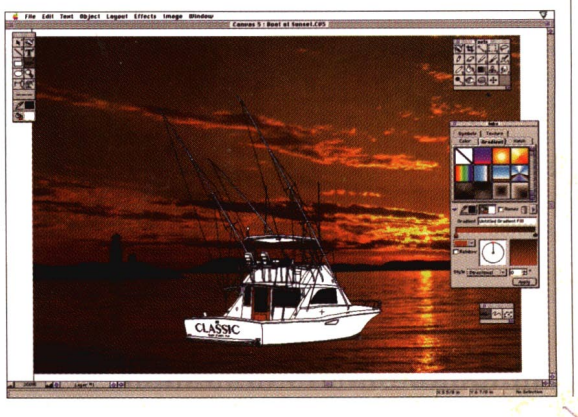
By Rebecca Gulick

After months of delays, Deneba Software said it is now on schedule to get a major upgrade to its omnibus graphics application out the door on July 1.

Version 5.0, expected to cost $599, will mark an overhaul of Canvas from an illustration program to an integrated suite of drawing, image-editing, document-design, presentation and illustration tools.

Canvas 5, which was originally slated to ship by the end of 1995, was held up in part because of last-minute plans to add Internet authoring capabilities, according to Deneba President Manny Menéndez. Such features are now required in graphics ap-

See Canvas, Page 78



New image-editing features in Deneba's Canvas 5 will include a Quick Mask command for creating, viewing and editing masks directly on an image.

1983
UPSTART COMPAQ SHIPS THE WORLD'S FASTEST PC–BEATS IBM - BECOMES INDUSTRY LEADER.

1985
DELL GOES DIRECT - CUSTOMIZING LOW-COST, HIGHEST-PERFORMANCE PCs. CONSUMERS REJOICE.

1996
POWER COMPUTING HAS LEARNED A FEW LESSONS.

INTRODUCING THE FASTEST MACOS SYSTEM EVER MADE.

PowerTower redefines the state-of-the-Mac. Breaking the 150MHz speed barrier, Power Computing has designed the world's fastest MacOS system - again.

Running at a blazing 180 or 166MHz, the system's PowerPC 604 chip makes the PowerTower more than 20% faster and more than 20% less expensive than even the fastest Apple, the PowerMac 9500/150. Our CPU advantage, coupled with the PowerTower's stock 7200 RPM 2 Gig AV-rated drive, screaming on-board video, 512K Level 2 cache, 3 PCI expansion slots and quad-speed (4X) CD ROM makes the new PowerTower the highest-performing, most reliable MacOS system you can own. PowerTower is uniquely designed to meet the exacting standards of graphic designers, multi-media pros and engineers who require the absolute, highest performance MacOS systems, at radically low price points. And best of all, you can get your PowerTower any way you want it since each system is configured to your specs and needs - and all are backed by a no risk, love-me-or-l'm-history, 30-day money-back guarantee.

MW EDITORS' CHOICE

MacUser ZD LABS

THE POWERTOWER 604/180

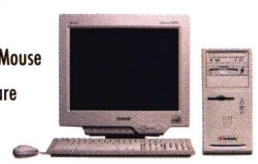
PowerComputing

PowerTower 180 Hot Pick
180MHz PowerPC 604 Processor
- 32 MB RAM (256 MB Max)
- 2 GB 7200 RPM AV Hard Drive
- Quad-speed (4x) CD-ROM Drive
- 512K Level 2 Cache
- Twin Turbo 128M graphics accelerator with 4MB VRAM
- 2 MB VRAM on-board (4 MB Max)
- 3 PCI Expansion Slots
- Connectix Speed Doubler
- Mini-tower enclosure
- Extended Keyboard and Mouse
- $1,200 in bundled software

$4,995

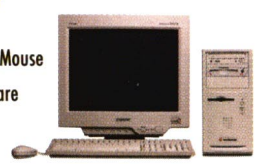
PowerTower 180 Starter
180MHz PowerPC 604 Processor
- 16 MB RAM (256 MB Max)
- 2 GB 7200 RPM AV Hard Drive
- Quad-speed (4x) CD-ROM Drive
- 512K Level 2 Cache
- 2 MB VRAM on-board (4 MB Max)
- 3 PCI Expansion Slots
- Connectix Speed Doubler
- Mini-tower enclosure
- Extended Keyboard and Mouse
- $1,200 in bundled software

$4,195



PowerTower 166 Starter
166MHz PowerPC 604 Processor
- 16 MB RAM (256 MB Max)
- 2 GB 7200 RPM AV Hard Drive
- Quad-speed (4x) CD-ROM Drive
- 512K Level 2 Cache
- 2 MB VRAM on-board (4 MB Max)
- 3 PCI Expansion Slots
- Connectix Speed Doubler
- Mini-tower enclosure
- Extended Keyboard and Mouse
- $1,200 in bundled software

$3,795



AND THE MOST INEXPENSIVE 604 SYSTEM EVER SOLD.

Don't even think about PowerPC 601 systems. Now for the first time, PowerPC 604 MacOS computing is available to everyone - all at a price starting well below $2,000.

Power Computing's PowerCenter features the 604 PowerPC running at 150, 132 and 120MHz. The PowerCenter's upgradeable daughtercards, make stepping up to faster clock speeds a snap. Available in desktop and low-profile enclosures, each PowerCenter is stocked with lots of RAM, large hard disk space, video RAM, 256k Level 2 cache, 3 PCI expansion slots, extended keyboard, mouse and over $1,200 in bundled software. Custom options include an Iomega Zip drive, powered speakers, additional RAM and specially-priced software and hardware packages. PowerCenter delivers the performance and value demanded by the small-office, home-office, enterprise and graphics user. All PowerCenter systems can be personalized allowing you to custom configure your system with the features you want - all backed by a no risk 30-day, love-me-or-I'm-history money back guarantee - and starting at less than $2,000.

MACUSER EDITORS' CHOICE AWARD 1995 FINALIST

MacWeek

THE POWERCENTER 604/120

PowerComputing

Configure it any way you want it.

PowerCenter 150 Starter
150MHz PowerPC 604 Processor
- 16 MB RAM (256 MB Max)
- 1 GB Hard Drive
- Quad-speed (4x) CD-ROM Drive
- 256K Level 2 Cache
- 1 MB VRAM on-board (4 MB Max)
- 3 PCI Expansion Slots
- Desktop enclosure
- Extended Keyboard and Mouse
- $1,200 in bundled software

$2,995

PowerCenter 132 Starter
132MHz PowerPC 604 Processor
- 16 MB RAM (256 MB Max)
- 1 GB Hard Drive
- Quad-speed (4x) CD-ROM Drive
- 256K Level 2 Cache
- 1 MB VRAM on-board (4 MB Max)
- 3 PCI Expansion Slots
- Desktop enclosure
- Extended Keyboard and Mouse
- $1,200 in bundled software

$2,495

PowerCenter 120 Starter
120MHz PowerPC 604 Processor
- 8 MB RAM (256 MB Max)
- 850 MB Hard Drive
- Quad-speed (4x) CD-ROM Drive
- 256K Level 2 Cache
- 1 MB VRAM on-board (4 MB Max)
- 3 PCI Expansion Slots
- Low-profile enclosure
- Extended Keyboard and Mouse
- $1,200 in bundled software

$1,895

All Power Computing Systems Come With The Following Software- FREE:

MacOS 7.5.3
FWB Hard Disk Toolkit PE
FWB CD-ROM Toolkit
Claris Works
Grolier's Encyclopedia
Now Utilities
Now Contact
Now Up-to-Date
Nisus Writer
Intuit's Quicken SE
America Online
Compuserve
Launch CD
250 Bitstream Fonts
US CD Atlas
World CD Atlas
The Animals CD-ROM
Connectix Speed Doubler*
*PowerTower only

PLUS, YOU CAN UPGRADE ANY SYSTEM WITH THESE:
- INTERNET PACKAGE $195: (includes Global Village Teleport Platinum 28.8 modem plus Apple Internet Connection Kit software)
- 15" SONY MULTISCAN 15SX TRINITRON MONITOR $499
- LABTEC SPEAKERS STARTING AT $29
- 14" MAG INOVISION MONITOR $299
- INTERNAL IOMEGA ZIP DRIVE $159

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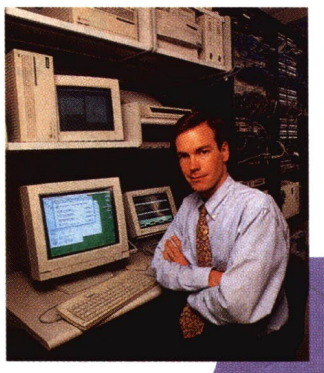
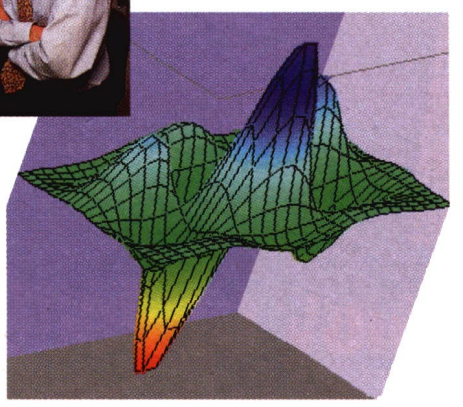
UniQorn leaps into layout fray • NewTek focuses LightWave 3D on Mac platform • X-Matte, Ultimatte go to mat over compositing • Bentley readies 3-D modeling package

18 GATEWAYS

Mac Java tools market heats up • Quarterdeck trades e-mail with Microsoft Exchange • Setting up Internet storefronts gets easier • DataViz hopes to make Web browsing friends



Picking good individual tools rather than integrated packages is the key to successful network management. See Solutions, Page 41.



Do the wave: WaveMetrics updates IGOR Pro, its scientific analysis and graphing software. See News, Page 6.

With great image quality and price, Polaroid gives users a new view of digital photography. See Reviews, Page 33.

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Large-screen, high-resolution monitors offer more viewing space, but at a higher price.

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MACWEEK INSIDER MATTHEW ROTHENBERG

Two forward, one back

Is *anyone* really surprised?

According to the latest word out of Apple, Copland has been pushed back to mid-1997; furthermore, Developer Release 1 won't rear its head until this summer.

Those of us in the computer industry have become all too familiar with these holdups and slowdowns — especially with operating systems. However, I would suggest that this time around, the Copland delay may actually be for the right reasons.

Honest, I feel the pain of developers faced with the prospect of Apple missing yet another pivotal deadline. Originally promised for mid-1995, Copland finally passed its first big milestone, DR0, in January. Developer Release 1, or DR1, expected at the Apple Worldwide Developers Conference in May, was to be the OS' spring cotillion.

Now the gowns and invitations have to be mothballed till summer.

Beyond the symbolism of DR1 going MIA at WWDC, the no-show could have a real impact on the welfare of Macintosh developers holding out for the next big platform thing. Although many will be sanguine — they miss scheduled ship dates, too — some are going to be very angry. For a few, this news may be the straw that breaks their resolve to keep supporting the Mac OS.

To stalwart developers who have been resisting Microsoft Corp.'s overtures to switch allegiances to Windows 95 and NT platforms, another Copland slip will come as a slap in the face. But I think the sting will fade pretty quickly.

Given the negative publicity Apple has generated in the past six months; the last thing it needs is more bad tidings. However, this particular flavor of bad news seems to be akin to Apple's $740 million loss in the previous quarter.

Distasteful? Undoubtedly. Necessary? Probably.

While developers won't get their hands on DR1 soon, they will be hearing from CEO Gilbert Amelio about how Apple's OS plans are being retooled to bring them in sync with the company's Internet strategy. A focus on the Internet — a focus on *anything*, as a matter of fact — is long, long overdue from Apple, and nobody said getting the platform back on track would be pretty.

Apple is hardly the only company that has felt the call of the Internet and responded with a wrenching product overhaul. No lesser entity than Microsoft has done a remarkable job over the past six months in aiming its products at the Internet.

Considering the vitality of the Net, it is incumbent on Apple to respond.

Despite the current state of détente between Cupertino and Redmond, Apple and Microsoft are still relentless OS competitors. Anything big enough to scare 800-pound gorilla Microsoft into changing its entire product line is probably big enough to compel Apple to tear up its blueprints as well.

Nor is this the first hard decision Apple has made as it trains its sights on the Internet. Apple's decision to shut down eWorld after two years of tepid operation was hardly a public-relations coup, but it was a necessary step in refocusing the company's on-line strategies.

Considering the vitality of the Internet market, it is incumbent on Apple to provide an adequate response. Look at the Internet solutions third parties are building on the Mac platform. This week alone, MacWEEK's front page delineates Deneba Software's moves to turn Canvas 5.0 into a Web graphics tool, Netscape Communications Corp.'s aggressive Mac plans for its market-leading browser and the overture of Adobe Systems Inc. et al to on-demand printing. In short, it's not just Microsoft that's changing its plans.

Developers may perceive Apple's decision to stake its future on the Internet as myopic, given the historically broader scope of Mac OS applications. However, if the Mac is going to be a niche platform for the foreseeable future, Apple should at least stake its claim on the right niches. □

Matthew Rothenberg, MacWEEK senior associate editor/GA, can be reached at matthew_rothenberg@macweek.com.

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Claris is a moneymaker

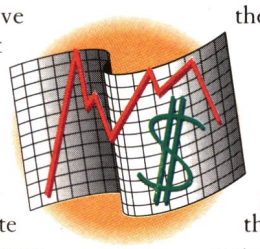
Apple unit shines in second quarter

By Mark Hall

In the midst of Apple's financial woes, Claris Corp. racked up significant second-quarter revenue gains. Apple's wholly owned software subsidiary last week announced revenues of $64.4 million for its second fiscal quarter, representing a 60 percent increase over the same quarter last year. The Santa Clara, Calif.-based company did not reveal its profits.

Claris President Guerrino De Luca said, "Our growth is doing better than the industry as a whole," compared to both Mac and Windows software markets. He said the company continues to earn about 80 percent of its revenues from Mac software and the remainder from Windows software.

Claris said its revenues jumped last quarter because it began selling Apple-branded products in October. De Luca said Claris would have grown by 20 percent from the previous year's quarter even without revenues from the Mac OS, the Internet Connection Kit, Apple Remote Access and other software.



Although Claris did not report profits, De Luca said he was particularly pleased with his company's profit performance. Further, unlike its parent company, "Claris is hiring people across the board," he said.

According to sources, Apple CEO Gilbert Amelio shares De Luca's optimism. At a recent meeting, an employee noted that Amelio had not mentioned Claris' role in his restructuring plans. Amelio reportedly replied, "I didn't mention it because there's nothing to fix."

Jack Wilson, managing editor for the New York-based Computer Letter, said, "It's nice to see a point of light over there. It'd be great if the rest of the company was managed as well."

But Wilson questioned the strategic value of Claris. "If there is a question to be asked about Claris, it's: Do they have products that help to sell Macs? Where are they with OpenDoc, for example?" □

Lotus Notes 4 finally reaches Mac

By Joanna Pearlstein

Three years after its last major upgrade, Lotus Notes will hit the shelves this week with a new Mac version, Notes 4.1. Release 4.0 shipped for Windows in January.

Now Power Mac-native, Notes features a new interface. Similar to Lotus Development Corp.'s cc:Mail, Release 4.1 divides the screen into three panes: Notes' index pane shows document categories and folders; a navigation area lists messages and documents being browsed; and a preview pane displays the contents of a selected document (see 12.11.95, Page 37).

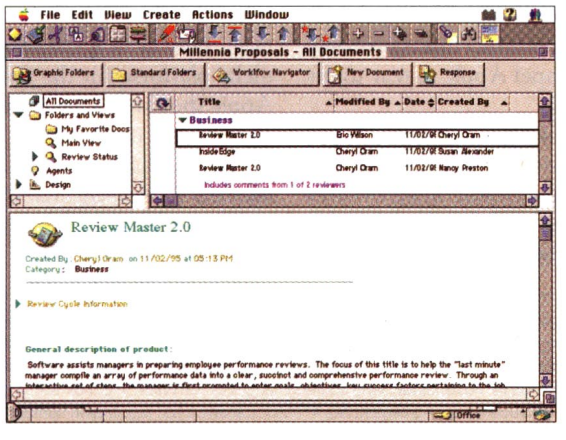
The bundled InterNotes Web Navigator imports HTML documents into Notes and lets users browse the Web from within Lotus' groupware application. URLs (uniform resource locators) in documents are now live links within Notes, and the server includes gateways for SMTP (Simple Mail Transfer Protocol) and X.400 e-mail systems.

The new client also includes mail-filtering and work-flow agents, better location and replication controls, and the LotusScript programming language.

This week's shipment of Release 4.1 for the Mac is joined by new clients for OS/2 Warp, Windows NT, AIX, Solaris and HP-UX. Lotus also released servers for OS/2 SMP, Novell NetWare, Windows 95, Alpha-based Windows NT and Solaris x86. Lotus said Release 4.1 will include InterNotes Publisher 4.0, a server add-on that automatically creates Web pages from Notes documents and databases.

The full Notes client version costs $275 in volume. A runtime client, Notes Desktop, costs $69, and an e-mail client, Notes Mail, costs $55.

Lotus Development Corp. of Cambridge, Mass., is at (617) 577-8500 or (800) 828-7086; fax (800) 575-6887; http://www.lotus.com. □



Lotus Notes gets a face lift: The new Mac client features a three-pane interface for viewing Notes documents and e-mail messages.

New Apple printer, color scanner due

By Matthew Rothenberg

Apple will reportedly tone up the midrange of its laser printer line and raise the resolution of its flatbed-scanner family this summer, sources said.

The company is planning to replace the LaserWriter Select 360 with an Ethernet-capable model. Sources said the new printer will be based on a Canon engine that outputs 12 letter-size pages per minute at a resolution of 600 dpi. The LaserWriter Select 360, which Apple discontinued last week, prints 10 ppm and is based on a Fuji Xerox engine. The upcoming device will cost about $1,500, comparable to the Select 360.

The new printer will reportedly come standard with a multiprotocol Ethernet interface that handles AppleTalk, IPX and TCP/IP. The device will also include LocalTalk and Centronics parallel interfaces. Like the earlier model, it will switch automatically between PostScript Level 2 and HP PCL, and it will come standard with 35 Type 1 fonts. The new printer will run on an AMD 29040 RISC chip and will come with 4 Mbytes of RAM, which can be upgraded to 32 Mbytes, sources said. Users will be able to purchase a duplexer and an envelope feeder for the printer, sources said.

The company's upcoming flatbed scanner is expected to fill in the high end of Apple's OneScanner line. Sources said the device will feature an optical resolution of 600 by 1,200 dpi; it will capture 30 bits of RGB color information per pixel in a single pass.

Apple declined to comment. □

Mac clones gain speed

Besides this week's revamp of its clone lineup, Power Computing Corp. will pass along performance gains to its PowerWave and PowerCurve users.

The company will release two PowerPC 604-based daughterboard upgrades for its PowerWave clones. The 132-MHz PowerWave 604/132 CPU Upgrade card costs $495; a 150-MHz model is $695. The $295 PowerCurve 604/120 Upgrade card will modify the PowerCurve 601/120. PowerCurve updates with 132- and 150-MHz 604 chips are slated for July.

Power said it will require users to provide serial numbers of models to purchase the cards.

Power Computing Corp. of Round Rock, Texas, is at (512) 246-7807 or (800) 999-7279; fax (512) 388-6799; info@powercc.com; http://www.powercc.com. □

Spyglass to acquire Surfwatch

By James Staten

Spyglass Inc. is adding a significant new tool to its Web kit. Last week the company announced a deal to acquire Surfwatch Software Inc., maker of Internet content-filtering tools.

Naperville, Ill.-based Spyglass plans to purchase Surfwatch in a stock swap valued at $12.6 million. Officials at Los Altos, Calif.-based Surfwatch said that upon completion of the deal, expected this week, the company will become a West Coast research and development division of Spyglass. No layoffs are expected at either company.

Spyglass CEO Douglas Colbeth will run the combined company; the future role of Surfwatch President Bill Duvall is undetermined.

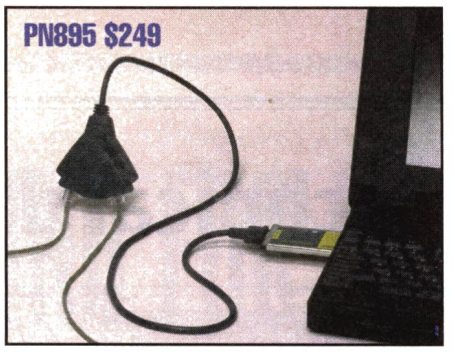
Jay Friedland, vice president of marketing at Surfwatch, said his division's first order of business will be to integrate its Internet-filtering technologies into the client and server portions of Spyglass' Web Technology kits, which were announced this month and due this summer.

"[Spyglass] recognized that Internet filtering is more than a parental-control thing and that it has applications in the intranet and corporate worlds," Friedland said.

As with the other components of Spyglass' Web Technology kit (see 04.15.96, Page 1), an OpenDoc version of Surfwatch will be developed, according to Friedland. An update to Surfwatch that will make it compatible with Open Transport is due sometime in May. □

EtherMac™ PowerBook PC Card
Get basic 10Base-T or combo with thinnet (PN595-C) for an easy Ethernet connection for PowerBooks with PC Card slots.

INDUSTRY'S Fastest



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AirDock™
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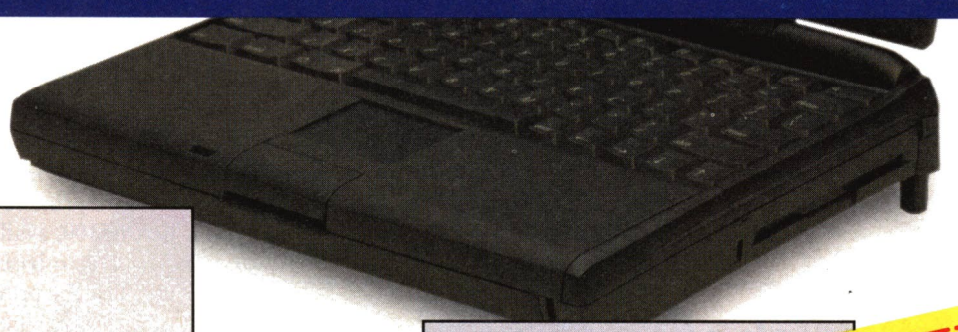

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IGOR Pro 3.0 masters technical data

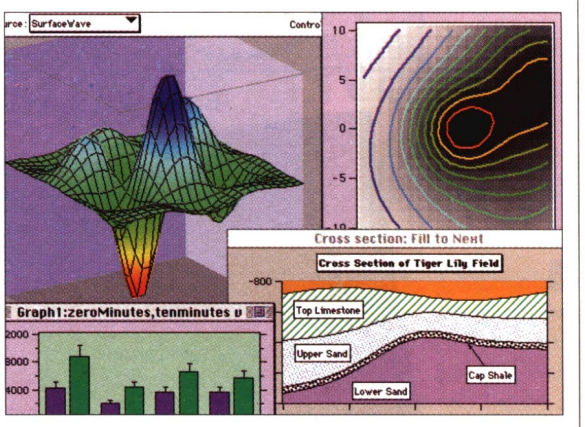
By David Morgenstern

WaveMetrics Inc. this week will update its IGOR Pro scientific analysis and graphing software with image-processing capabilities and support for multidimensional data sets.

The $495 Version 3.0 can process a data array of up to four sets of numbers or text data; the previous versions could handle a single column of figures.

The update also provides a Graphical Splicer tool for 3-D data sets that can make two-dimensional slices across several planes and display the results as an image or contour plot.

IGOR 3.0 gives users greater control over graphing: The shape, color and size of data points can be set by values from another data set, WaveMetrics said. It can also create layered graphs.



IGOR Pro 3.0 lets users dissect 3-D data along multiple planes and display data slices as an image or contour plot.

"We often have plots with a point for each of many chemicals," said Paul Tratnyek, professor at the Oregon Graduate Institute of Science and Technology in Portland Ore. "[Version 3.0] allows us to easily view the data and know what points go with what compounds. Nothing can approach IGOR for control over formatting the final printed result."

The upgrade sports 72 new fill patterns, and it can now import Flexible Image Transport System, HDF (Hierarchical Data Format), PICT and TIFF images.

Helping users organize variables, text strings and data sets, Version 3.0 offers a browser window that can create folders as well as load objects from previous experiments and files. IGOR's built-in programming language can now run AppleScript scripts.

Users of Version 2.0x can upgrade for $88, or $49 without a manual; users who purchased it after Nov. 1, 1995, can upgrade for shipping costs.

WaveMetrics Inc. of Lake Oswego, Ore., can be reached at (503) 620-3001; fax (503) 620-6754; sales@wavemetrics.com; http://www.wavemetrics.com/. □

ViewSonic ushers in monitors

By Joanna Pearlstein

Offering users new display choices, ViewSonic Corp. this month released new entry-level and midrange monitors.

The company's 15-inch Optiquest V655 costs $349 and provides a 13.6-inch viewing area. The monitor has a 0.28mm dot pitch and a maximum Macintosh resolution of 1,024 by 768 pixels at 80 Hz.

The V655 comes with an anti-glare, anti-reflection coating, ViewSonic said.

In addition, the company added a pair of midrange monitors to its SonicTron aperture-grille line. The 20-inch ViewSonic GT800 costs $1,899, and the 17-inch ViewSonic GT770 is $899; both models come with ViewSonic's color-matching software.

The GT800 has a 19.1-inch viewing area and a 0.30mm stripe pitch. It has a maximum Mac resolution of 1,280 by 1,024 at 75 Hz, ViewSonic said.

The GT770 offers a 16.1-inch viewing area and has a 0.25mm stripe pitch. The monitor supports a maximum resolution of 1,024 by 768 at 80 Hz.

ViewSonic Corp. can be reached at (909) 869-7976 or (800) 888-8583; fax (909) 468-3756; http://www.viewsonic.com. □

CMS ships, Yamaha clips CD-R drives

By David Morgenstern

Storage vendors this month rolled out new CD-Recordable drives and price cuts.

▶ **CMS Enhancements Inc.** released its $1,095 CDMaker recorder. Based on a Ricoh mechanism, the caddy-feed unit can record and play at double speed.

CMS said the drive supports multisession Mac Hierarchical File System, CD-ROM XA, ISO 9660, hybrid Mac and 9660, digital audio, Video CD, and CD-I formats. The system comes with Astarte GmbH's Toast CD-ROM Pro authoring software.

▶ **Yamaha Systems Technology Inc.** trimmed the prices of its CD-R models, which use Yamaha's proprietary mechanism. Previously $1,499, the internal CDR100 is now $1,149; the recorder reads and writes at 4x speed. The CDE100 II external model costs $1,249.

Yamaha's CDR102, which reads at 4x speed and writes at 2x speed, is now $769. The external version is priced at $859.

The systems do not ship with authoring software; according to Yamaha, the units are compatible with software from several vendors, including Astarte, Corel Corp., Elektroson Inc., Incat Systems Software Inc. and Optical Media International.

CMS Enhancements Inc. of Anaheim, Calif., can be reached at (714) 517-0915 or (800) 327-5773; fax (714) 956-8156; info@cmsenh.com.

Yamaha Systems Technology Inc. of San Jose, Calif., is at (408) 467-2300 or (800) 543-7457; fax (408) 437-9741. □

Newer unwraps 1-Mbyte L2 cache

Newer Technology Inc. last week released a high-capacity Level 2 cache DIMM for PCI Macs that it claims is priced near the cost of caches with half the capacity.

The company's new 1-Mbyte DIMM, or dual in-line memory module, costs $278 and can boost the performance of most applications by 5 percent to 20 percent over a 256-Kbyte cache. It offers up to a 50 percent improvement in sorting operations on large database files and in rendering 3-D images.

Newer also sells a $140 256-Kbyte cache module.

Newer Technology Inc. of Wichita, Kan., is at (316) 685-4904 or (800) 678-3726; fax (316) 685-9368; sales@newertech.com; http://www.newertech.com. □

Nisca antes up new card printer

By Matthew Rothenberg

Nisca Corp. this month reshuffled its line of PVC card printers with a new model.

The PR5100, available now for $9,800, joins the Tokyo-based company's $18,000 PR5002; like the previous model, it is distributed in the United States by Kanematsu USA Inc.

The device features a thermal-transfer engine that outputs 300-dpi, 24-bit-color images to 54mm-by-85.5mm plastic cards. The SCSI device can output a single-sided card in about 30 seconds, Nisca said. It can print on both sides of a card.

In addition, Mac users can run the printer with Nisca's $2,000 Claymore software, which includes image-capture, design and database features.

Users can switch from CMYK to resin-black ribbons to print infrared-readable bar codes, the company said. Users can purchase an internal magnetic stripe encoder for about $2,000. A $3,500 heat laminator lets users apply holographic overlays, the company said.

Kanematsu USA Inc. of Somerset, N.J., can be reached at (908) 271-7367; fax (908) 271-7357. □

Nisca's PR5100 PVC card printer can be tricked out with lamination and magnetic-striping options.

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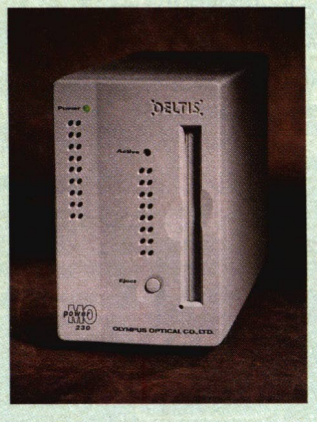

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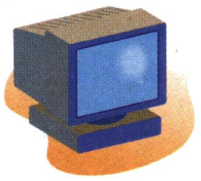
Monitor Beat



By any other name. Nanao USA Corp. of Torrance, Calif., this month changed its name to Eizo Nanao Technologies Inc. The company said "Eizo" means image or vision in Japanese. The new corporate identity combines the monikers of the parent Nanao Corp., based in Matto, Japan, and Eizo Corp., Nanao's distribution arm for the European and Asian markets.

Eizo Nanao in June will ship new 15- and 17-inch monitors in its FlexScan series; the models will cost $598 and $1,189, respectively. The displays will feature on-screen controls and nonreflective coatings.

Users will be able to add speakers to the displays with i•Sound, a $79 detachable speaker unit that fits on the monitor console. Phone (310) 325-5202; fax (310) 530-1679; http://www.traveller.com/nanao/.

The pen is mightier. MicroTouch Systems Inc. of Methuen, Mass., shipped a pair of TouchPen displays, which support both pen and finger input.

Aimed at point-of-sale, medical and security applications, the 15-inch model costs $1,595 and the 17-inch display is $2,125. The displays have 1,024-by-1,024-point or 2,048-by-2,048-point input resolutions with finger and pen modes, respectively. Phone (508) 659-9000 or (800) 642-7686; fax (508) 659-9100; http://www.microtouch.com.

Giving an inch. The Arlington, Va.-based Consumer Electronics Manufacturers Association recently approved a common method of stating display screen sizes.

Developed by a consortium of monitor manufacturers, the new guidelines state that manufacturers should note a display's actual viewing area in addition to, or instead of, the CRT size, which is almost always larger (see 10.23.95, Page 6).

— By Joanna Pearlstein

Philips preps 8x CD-ROM

By David Morgenstern

Philips Electronics North America Corp. expects to pick up the pace of CD-ROM performance when it releases an 8x drive in May.

The PCA80SC drive will cost $298 for an internal version, which transfers data at rates up to 1.2 Mbytes per second, Philips said. The price for an external version has not been set. The Fast SCSI-2 unit incorporates a 256-Kbyte cache and offers an average access time of 195 milliseconds. The drive also has a sleep mode, which shuts off the mechanism after five minutes of inactivity.

The PCA80SC reads discs based on the Mac OS' Hierarchical File System and several other formats, including CD-ROM Mode 1, ISO 9660, CD-ROM XA Mode 2 Forms 1 and 2, CD Plus, multisession Photo CD, Video CD, CD-I, and digital audio.

Philips Electronics North America Corp. of San Jose, Calif., can be reached at (408) 453-5129 or (800) 235-7373; fax (408) 453-0680; techmail@keymodules.philips.com; http://www.pps.philips.com. □

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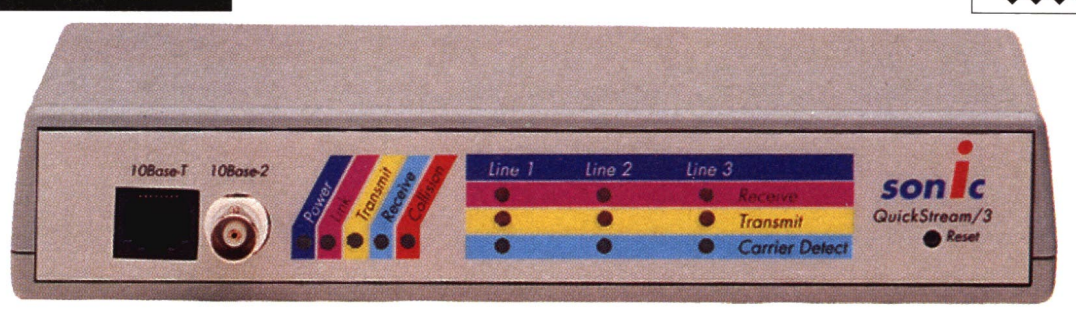

◆ **QuickStream/3** is an inexpensive, high performance PPP **Remote Access Server** which allows users to **connect** to your network from anywhere using standard modems or ISDN Terminal Adapters.

◆ That means telecommuters and travelling sales people can get up to the minute information from **databases**, send and receive **E-mail**, access group scheduling for meetings and even access **Internet** services such as **World Wide Web** (WWW), FTP, E-mail and News Groups.

◆ QuickStream/3 uses **Point to Point Protocol** (PPP), the industry standard protocol for cross platform remote access, so **Mac**, **PC** and **UNIX** users can all dial in and tap into the power of remote access. And since QuickStream/3 supports both **AppleTalk** and **TCP/IP**, the user doesn't have to learn new methods for accessing network services.

◆ Buy a QuickStream/3 between April 15 and June 30, 1996, and you will also receive the Dial-Out software upgrade, a $249 value, absolutely **free**. With the Dial-Out software, modems connected to the QuickStream/3 server can be accessed by users on the local network to send faxes, or to connect to online information services such as America Online, Compuserve, LEXIS/NEXIS or Internet Service Providers.

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Maximum Speed	115.2Kbps	115.2Kbps
Number of Modems Supported	200+	200+
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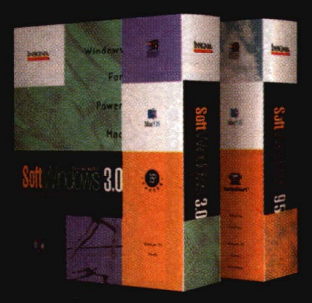

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ON-LINE FONTS

Spyglass Inc.'s Web Technology Kit will incorporate Bitstream Inc.'s TrueDoc font-imaging technology.

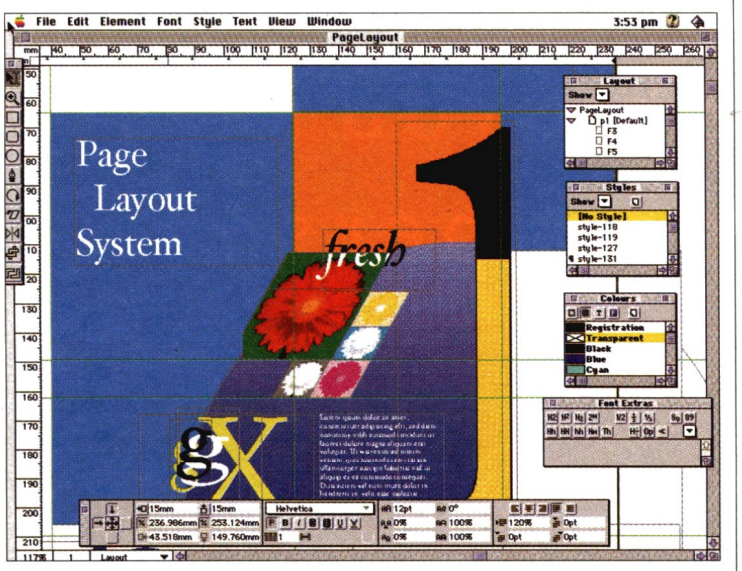
UniQorn rears its head

By Matthew Rothenberg

It's been a long time coming, but QuickDraw GX aficionados can now perform page-layout tasks with UniQorn, an application based on Apple's font architecture.

Originally slated to ship early in 1995, SoftPress Systems Inc.'s UniQorn features typographic, color-handling and printing capabilities that draw on GX and ColorSync 2.0, Apple's system-level color-matching technology.

According to SoftPress, UniQorn is aimed at users looking to create materials for multiple media, including CD-ROM and Web publishing, as well as print documents.



New page-layout contender UniQorn draws on QuickDraw GX for a variety of typographic, color-handling and printing capabilities.

UniQorn features a range of page-layout functions, including automatic generation of character-level style sheets and support for multiple master pages in a single document. A single UniQorn document can include pages in a variety of sizes and orientations, and users can view layouts, master pages and thumbnails simultaneously. UniQorn can also map styles to HTML tags for creating Web pages.

Users can import EPS, Desktop Color Separation (DCS), TIFF, PICT and QuickDraw GX graphics. Images can be rescaled with a variety of controls, and the software can place bit-mapped graphics at any resolution, SoftPress said.

UniQorn can separate custom and spot colors and perform color trapping automatically, and users can preview color trapping on-screen, the company said.

The software can generate Pantone-calibrated color output; users can save pages as EPS or DCS files, and they can print separations or composites with crop marks, center crop marks, registration marks, star targets and ink labels.

The software allows users to create polygonal or Bezier frames that can accommodate either text or graphics. They can view every

See UniQorn, Page 14

LightWave 3D 5.0 to hit Mac shores

By Kelly Ryer

After years of seeing versions on almost every other platform, Mac-based 3-D mavens will finally get a chance to test drive LightWave 3D, NewTek Inc.'s modeling, rendering and animation package.

At this month's National Association of Broadcasters show in Las Vegas, Apple and NewTek announced NewTek's plans to bring the program to the Power Mac. The Mac OS version of LightWave 3D is slated to ship in the third quarter and will carry a price tag of $1,495.

According to NewTek, the Mac software will be identical to the current version, LightWave 3D 5.0, released last week for the Video Toaster, Windows, Silicon Graphics and Amiga platforms. LightWave 3D comprises two separate environments for modeling and layout tasks. The package includes an extensive list of high-end features, such as skeletal animation, inverse kinematics, ray tracing and metaballs.

Unlike many current Mac 3-D programs, LightWave 3D will let Power Mac users model both polygonal and NURBS (non-uniform rational B-splines)-based objects. The program's MetaNURBS feature will allow users to switch from polygonal to

See LightWave, Page 14

ADI's X-Matte can generate a matte from a still image or QuickTime movie. Slider controls can correct flare and screen imperfections.

Mac compositing apps come out of the blue

By Rebecca Gulick and Kelly Ryer

Adding to the arsenal of Mac-based digital video tools, two companies recently rolled out new versions of their blue-screen compositing software.

X-Matte from Advanced Digital Imaging Inc. is a $495 compositing tool that works with QuickTime movies as well as still images created in Adobe Photoshop or other Mac programs. The software can generate a matte from any QuickTime movie with a solid-color background, ADI said. Sliders let users adjust image and color settings and correct flare and screen imperfections.

X-Matte also allows users to synchronize black and white levels between foreground and background layers to smooth shadows within a composite.

X-Matte can be used with any Mac-based editing or compositing software, such as Adobe Systems Inc.'s Premiere, After Effects or Photoshop; Fractal Design Corp.'s Painter; Data Translation Inc.'s Media 100; or Avid Technology Inc.'s Media Composer or Media Suite Pro.

X-Matte also works with the company's Digital Magic, an $8,995 nonlinear video-editing system that incorporates alpha-

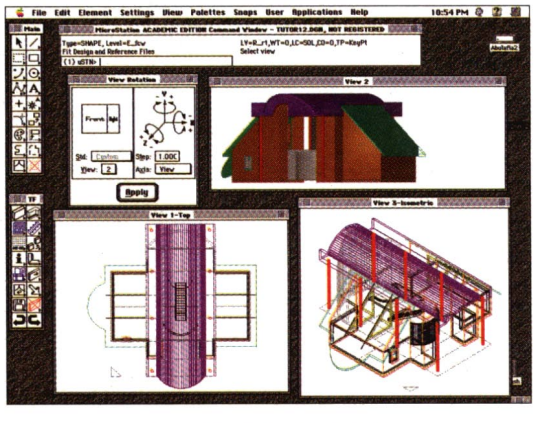
See Compositing, Page 14

Bentley builds 3-D modeler into CAD app

By Kelly Ryer

Bentley Systems Inc. in June will deliver MicroStation TriForma, a 3-D architectural modeling package that incorporates the company's MicroStation CAD program.

The program combines 3-D tools such as Boolean functions, multiple perspectives and Phong shading with traditional CAD tools. TriForma's 3-D solids tools let users generate a single building model that can be used to generate the floor plans, sections, elevations, renderings, animations, specifications and bills of material that architects must create before construction begins.



Put your house in order: In Bentley's MicroStation TriForma 3-D application, models can be viewed from several perspectives in shaded and wireframe views.

Documents generated from the 3-D solid model are updated dynamically when the building model is altered. Users on a network can view these documents on a read-only basis.

The $5,325 MicroStation TriForma package will include MicroStation 95, a version of the company's MicroStation software, also slated for release in June. Upgrades for users of the earlier MicroStation 5 will be $1,950 each.

In other Bentley news, the company announced that it has licensed Spyglass Inc.'s Web Technology Kit to add Internet-based interaction to its MicroStation engineering packages. For example, pricing of parts could be updated via the Web, which would allow architects to generate up-to-date cost estimates, the company said.

Bentley Systems Inc. of Exton, Pa., can be reached at (610) 458-5000 or (800) 236-8539; fax (610) 458-1060; http://www.bentley.com.

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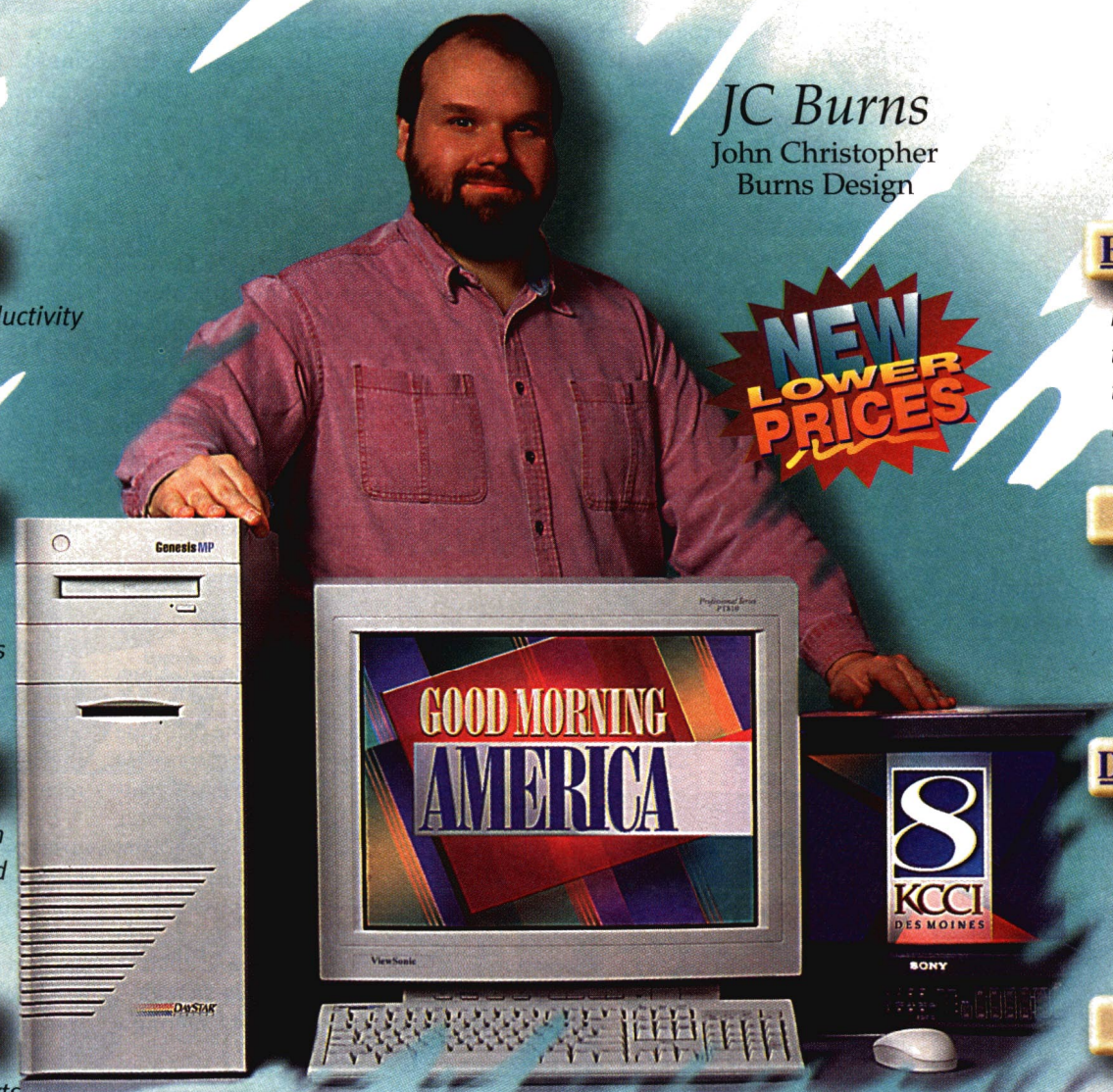

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UniQorn

From Page 12

frame in an outline view, fit any shape frame to a graphic or fit an image to any frame. Users can also flow text inside or outside any frame.

Thanks to its use of QuickDraw GX, UniQorn offers access to a variety of typographical effects. Users can take advantage of GX's Line Layout Manager and "smart font" capabilities. The application is WorldScript-savvy and includes multiple spelling dictionaries as well as hyphenation for a range of languages.

UniQorn is fully scriptable and recordable via AppleScript, SoftPress said.

"Even independent of GX, I think [UniQorn] has some unique and interesting features," said beta tester Scott Lawton, president of PreFab Software Inc. of Acton, Mass. "A couple of things attracted me to it. Obviously, the multipurposing they talk about is very cool, and I think it's especially important now; a document has to go multiple places now. The ability to have frames that are relative to the page is a big win.

"Another thing that appeals to me are the automatic and hierarchical character styles, creating styles for me on the fly," Lawton said. "Displaying hierarchical styles in an outline seems to be a very natural approach."

Lawton also applauded UniQorn's intuitive approach to creating polygonal frames for text and graphics. "I'm a Mac guy," he said. "I can use [Claris Corp.'s] MacDraw, but [Adobe] Illustrator always baffled me; with UniQorn I can just sit down and use it."

UniQorn will be available for $399 through July; after that, the list price will rise to $895.

SoftPress Systems Inc. of Sausalito, Calif., can be reached at (800) 853-6454; fax (415) 331-4824; http://www.softpress.com. □

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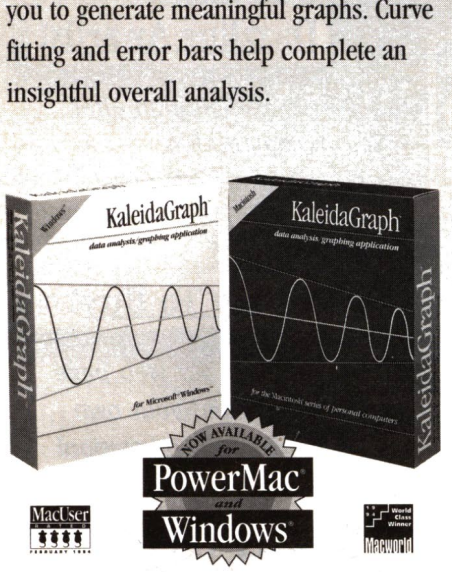

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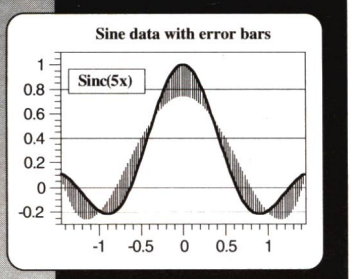
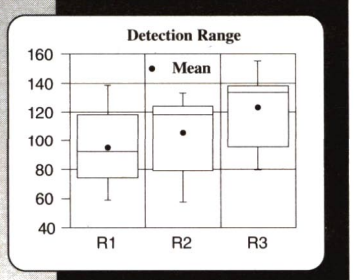
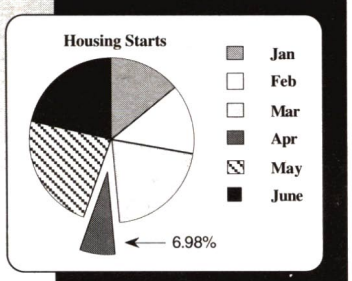
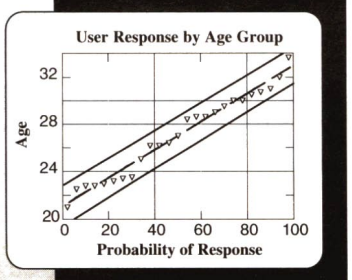
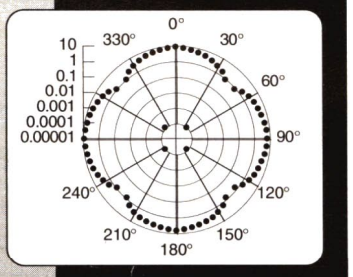
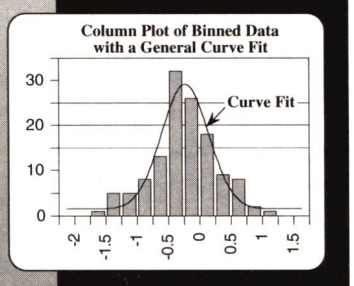












Adobe: Fix is in for Frame viewers

Time ran out this month for Power Macintosh users of Adobe Systems Inc.'s FrameMaker document-layout applications, but Adobe has offered to reset the clock free.

FrameViewer 5.1 and FrameReader 5.1, software for viewing FrameMaker documents, include a security-code time constraint that prevents users from opening the software if their system clock is displaying a date later than April 10, 1996. The glitch affects only the Power Mac versions and does not damage the application or files, Adobe said.

Users can download a patch that fixes the situation from the public technical support area at ftp.frame.com. Customers can also call (800) 843-7263 for information. □

LightWave

From Page 12

NURBS-based modeling in real time, NewTek said.

The Mac version will generate real-time previews using Apple's QuickDraw 3D shading technology. NewTek has not announced plans to support 3-D accelerator boards on the Mac platform, but Jim Parsons, director of marketing and business development, said such support is likely.

"We're like the Switzerland of the 3-D world," Parsons said. "We write all kinds of accelerator-board drivers on the PC side."

LightWave 3D for the Mac is entering a crowded 3-D market. Several competing products are already battling for this niche, including Strata Inc.'s $1,495 Studio Pro Blitz, Macromedia Inc.'s $699 Extreme 3D, Specular International Ltd.'s $899 Infini-D and Visual Information Development Inc.'s $1,995 Presenter Professional.

Parsons said LightWave 3D will be able to capitalize on its reputation among broadcasters and game developers working in cross-platform environments.

NewTek Inc. of Topeka, Kan., can be reached at (913) 228-8000 or (800) 862-7837; fax (913) 228-8099; customerservice@newtek.com; http://www.newtek.com. □

Compositing

From Page 12

channel data to simplify compositing, ADI said.

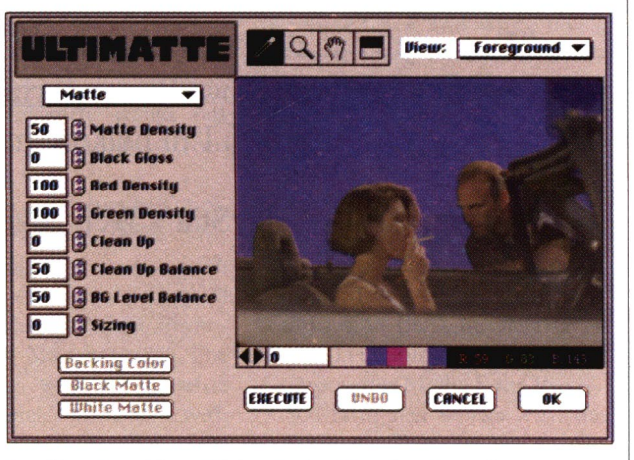
Ultimatte Corp.'s Ultimatte for Mac, available now for $1,495, is a Premiere plug-in transition module that also works with Data Translation's Media 100 and Grass Valley Group Inc.'s Video Desktop. A free upgrade that will include an update to the Premiere software and add an After Effects plug-in is slated to ship in June, Ultimatte said.

According to the company, both plug-ins will generate fully linear masks that smooth hard edges but maintain fine detail, shadows, blurred images and transparencies. Ultimatte can correct discoloration of foreground objects caused by light reflecting off a blue or green stage. The Screen Correction feature compensates for uneven lighting or painting on the screen, and Grain Killer filters out other screen anomalies without affecting the foreground image.

The Premiere plug-in also includes a Color Conformance feature, which matches the background and foreground colors to make the composite appear more realistic, and a Wipe tool, which allows users to compare the results of different adjustments.

Advanced Digital Imaging Inc. of Anaheim, Calif., can be reached at (714) 779-7772; fax (714) 779-7773; adi@adii.com; http://www.adii.com/.

Ultimatte Corp. of Chatsworth, Calif., can be reached at (818) 993-8007; fax (818) 993-3762; ultimatte@ultimatte.com; http://www.ultimatte.com/. □



Smoking transitions: Ultimatte for Mac plug-ins will generate fully linear masks that smooth hard edges but maintain fine detail, shadows, blurred images and transparencies.

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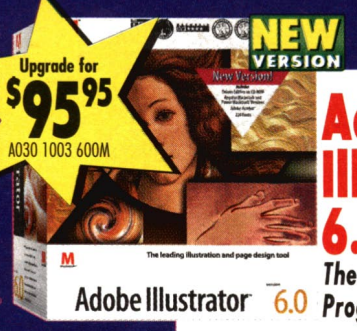

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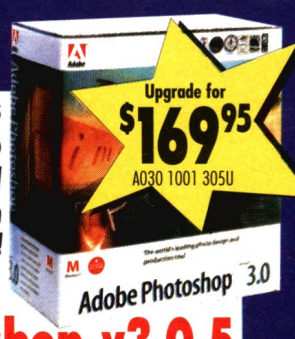

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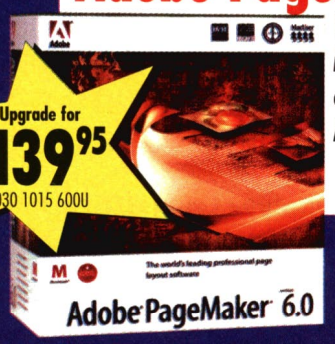

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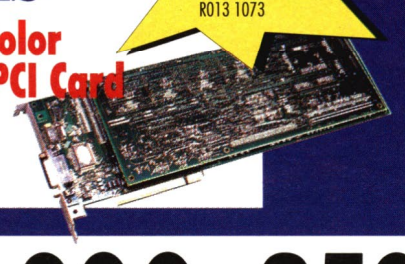

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RadMedia to do business on-line

PowerMedia readies intranet tools for Mac

By Rebecca Gulick

Seeking a foothold in business communications on the Web, RadMedia Inc. is polishing up authoring software for creating interactive multimedia presentations, training materials and demonstrations.

PowerMedia, due to ship for the Mac in June for $495, is a cross-platform application that is already available for Intel-standard PCs running Windows 95 as well as for Unix workstations.

The package will let users publish presentations in the company's own .rad format so clients with PowerMedia can view and edit them. Through PowerMedia, which acts as a plug-in for Netscape Navigator and Microsoft Corp.'s Internet Explorer, presentations will play back directly within Web browsers, RadMedia said.

While PowerMedia will convert presentations into HTML pages, timing, flow control, animation and transition effects can be viewed and edited only by clients who are running PowerMedia themselves. Full-screen playback and full-color printing will also require the PowerMedia application.

In addition, users will be able to save their presentations in Adobe Acrobat format.

According to RadMedia, PowerMedia's point-and-click interface will make it easy for users to control the flow of presentations; add Java applets; and incorporate digital audio, video and graphics into their presentations. PowerMedia presentations can also include hyperlinks to other resources on the Web or an intranet.

PowerMedia will feature editing capabilities for PostScript vector graphics as well as bit-mapped images. The software will also generate image maps automatically.

Users will be able to import images in a variety of formats, including TIFF, PICT, GIF and EPS. They will also be able to import CorelDraw, Adobe Illustrator and Macromedia FreeHand graphics saved as PostScript Level 1 files.

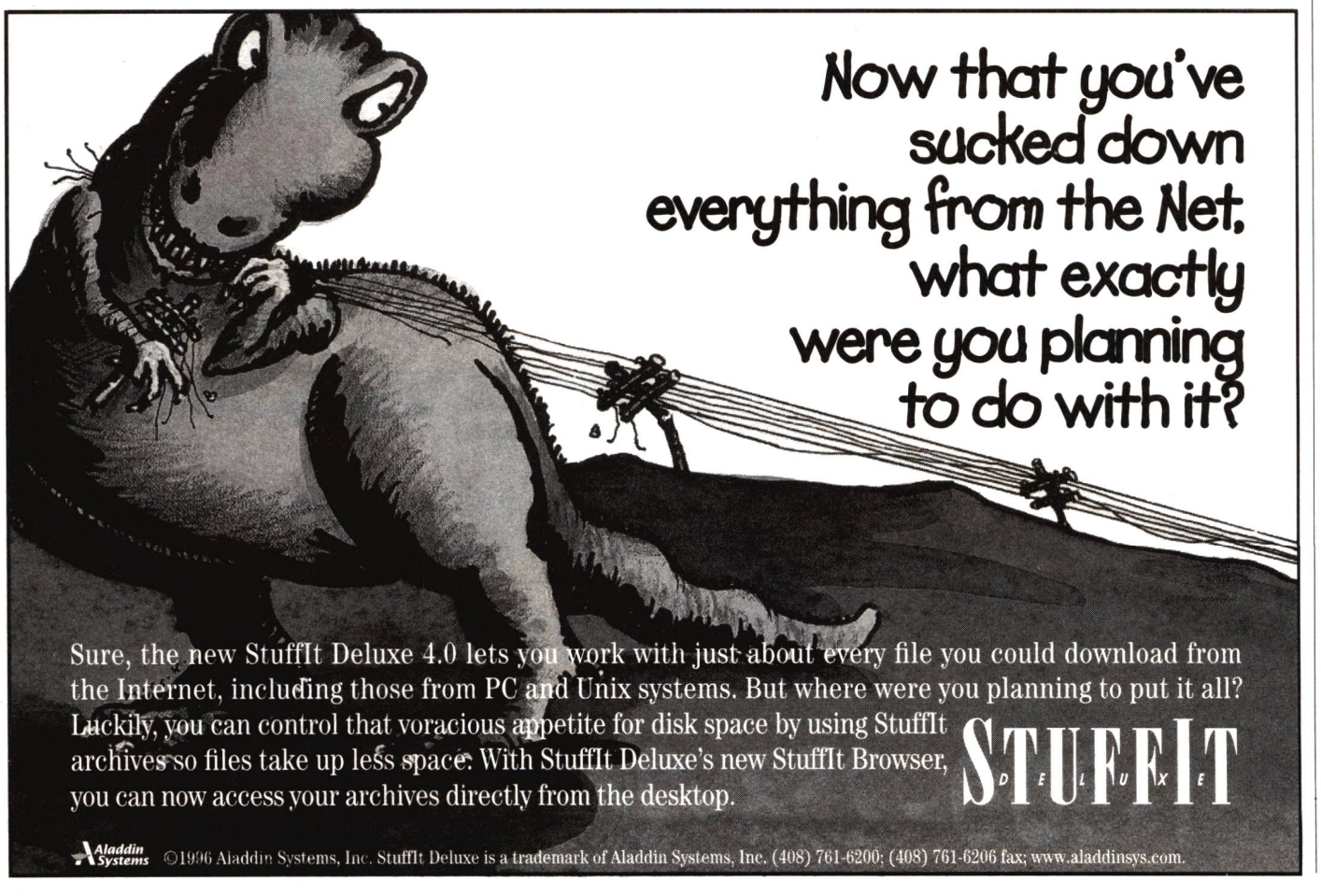
PowerMedia users can link to QuickTime and Audio Video Interleave video files on the Web, as well as to AIFF (Audio Interchange File Format), .WAV, .AU and Progressive Networks RealAudio audio files.

The interface will include floating palettes and multiple views. It will comprise authoring views, such as story line, storyboard, scene builder and scene master. The tab-based PowerPalette will provide access to all attributes of a presentation, such as links, tables, images and text. Via PowerPalette, users will be able to define the appearance and behavior of graphical objects within PowerMedia presentations. The PowerTools palette will contain graphics-manipulation tools.

PowerMedia's scalable-canvas feature will support full-screen playback on any size monitor, RadMedia said.

RadMedia Inc. of Palo Alto, Calif., can be reached at (415) 617-9430 or (888) 723-6334; fax (415) 473-6826; info@radmedia.com; http://www.radmedia.com/. □

RadMedia's PowerMedia presentation software is aimed at corporate users who want to publish on the Web. Users will be able to access all attributes of a presentation via the PowerPalette.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FONT BEAT

All in the family.

International Typeface Corp. of New York in March released quarterly additions to its line of original Type 1 typefaces, including display fonts, text faces and graphics fonts.

The new faces include ITC Serengetti, a condensed, sans-serif, all uppercase display font. The typeface fonts cost $29 each; the graphics fonts, $49 each. Phone (212) 371-0699; fax (212) 752-4752; typeface1@aol.com.

Monotype brings DTL to U.S. Monotype Typography Inc. of Chicago in February became the sole U.S. distributor of digital fonts from Netherlands-based Dutch Type Library. The DTL fonts are available for $125 per style. Monotype also enhanced its $50 Gill Sans PostScript typeface family by adding small capitals and old-style figures. Phone (312) 855-1440 or (800) 803-6964; fax (312) 855-9475.

Agfa licenses MicroType. Agfa, a division of Bayer Corp., based in Wilmington, Mass., recently announced that it has licensed its MicroType compression technology to several companies that will include it in their printer products.

Minolta Co. Ltd., Olympus Image Systems, RISO Inc. and Xerox Corp. are among the licensees. Agfa also delivered AgfaType Japanese Collection ATM-J Edition CD-ROM, a collection of 25 $200 kanji fonts and 25 $50 kana typefaces. Phone (508) 658-5600 or (800) 424-8973; fax (508) 657-8268; http://www.agfahome.com/.

Attention hipster earthlings. Font start-up Attention Earthling of Brooklyn, N.Y., designs and sells funky display typefaces such as the techno-rave-styled Silverlux and the electrified Brillo. Phone (718) 783-4930; http://www.inch.com/~atnearth/.

— By Rebecca Gulick

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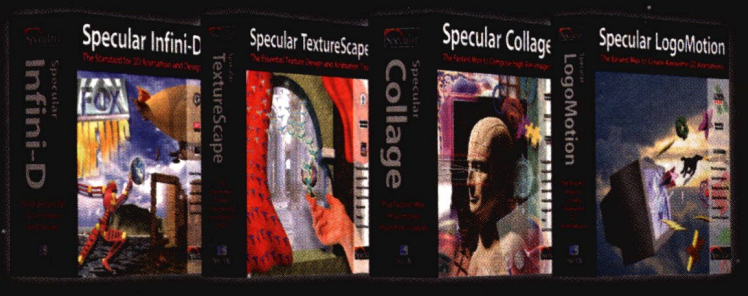

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More Java tool kits to hit Mac desktops

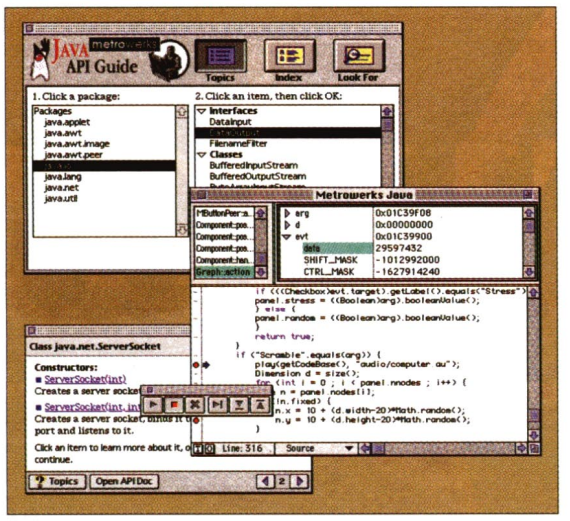
Competitors set WWDC releases

By Clifford Colby

Following Symantec Corp.'s release last week of Café, Metrowerks Inc. and Natural Intelligence Inc. are set to deliver finished Java development environments for the Mac.

Metrowerks plans to ship this week Discover Programming with Java, a $99 development environment for the programming language from Sun Microsystems Inc.

The Discover CD-ROM will include 680x0 and Power Mac versions of a new Java compiler, linker and source-level debugger, all written by Metrowerks. Microsoft Corp.'s Internet Explorer Web browser and an electronic book on Java programming will also be included.



Metrowerks' Discover Programming with Java tool kit will include a source-level debugger for tracking down errors in Java code and Apple Guides explaining Java classes and commands.

Metrowerks said CodeWarrior 9, due in May at the Apple Worldwide Developers Conference in San Jose, Calif., will include the Java tools from Discover.

Natural Intelligence said it plans to ship the finished version of Roaster, its Java development environment for the Mac, at WWDC.

The final version of Release 1 will add a 680x0 version, HTML editing tools, integrated class-tree and browser windows, AppleScript support, and on-line help. The Roaster developer release, available since December, includes

See Java, Page 20

Quarterdeck e-mail to talk to Exchange

By Clifford Colby

Quarterdeck Corp. plans this week to deliver the first major upgrade to the e-mail package it acquired from Microsoft Corp. in the fall of 1995 and SoftArc Inc. said it plans to have the next version of First-Class out in the third quarter.

Version 3.6 of Quarterdeck Mail, formerly Microsoft Mail for AppleTalk Networks, will be compatible with Microsoft's Exchange e-mail and groupware system. The Quarterdeck server will be able to trade messages and enclosures with Microsoft's new program using Exchange Connector for AppleTalk, which is bundled with Exchange.

Quarterdeck Mail 3.6 will also turn URLs (universal resource locators) found in messages into hyperlinks that, when clicked on, launch the user's Web browser. In replies it will quote text from the previous message and automatically add a signature. Quarterdeck said the client and server portions of its e-mail system will be compatible with Open Transport.

Pricing for Quarterdeck Mail will start at $245 for five users and $395 per server. Upgrades will be

See E-mail, Page 20

Web Buddy to browse off-line

By James Staten

DataViz Inc. hopes its latest utility will become every Internet user's friend, thanks to the software's off-line and automatic browsing capabilities.

Web Buddy, priced at $49 and expected to ship in July, is a collection of utilities integrated through a tool bar that appears when the user's Web browser is the foremost application.

It will provide tools for downloading Web pages and entire sites with all associated graphics and links, so users can browse off-line. Users will also be able to set Web Buddy to download Web pages automatically.

Other tools expected to be included are a bookmark organizer and a converter that turns Web pages and graphics into formats that can be viewed with traditional word processors.

DataViz Inc. of Trumbull, Conn., is at (203) 268-0030 or (800) 733-0030; fax (203) 268-4345; info@list.dataviz.com; http://www.dataviz.com.

DataViz's Web Buddy will be with users whenever their browsers are open. Here it is being used to download a page and file it in the Business category.

Global eases file transfers via Zmodem

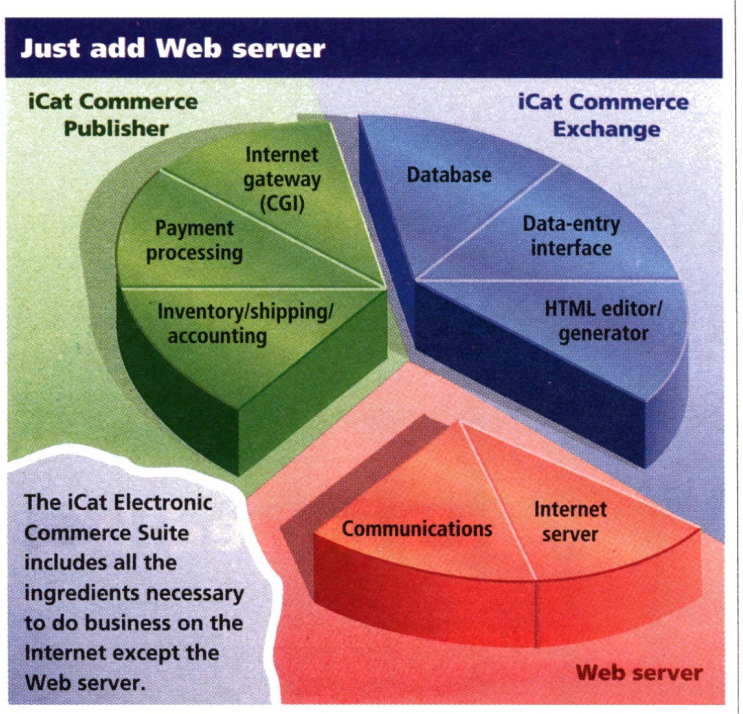
By Joanna Pearlstein

Hoping to simplify the task of transferring files modem-to-modem, Global Village Communication Inc. last week rolled out GlobalTransfer.

Using the Zmodem protocol, the $29.95 program lets users send files by simply selecting a file and recipient and clicking Send. GlobalTransfer automatically answers incoming calls and puts files away. A phone book lets users store names and phone numbers.

"It's worked really well," said beta tester Eric Marti, president of Palo Alto, Calif.-based Com-

See Global, Page 20



iCat to do Net commerce

By James Staten

Interactive Catalog Corp. is hoping to make it easier for Mac users to set up electronic storefronts. In May, the company will ship a complete commerce system priced at less than $2,000.

The iCat Electronic Commerce Suite will consist of two tools: a Web catalog-creation database and a transaction-processing server, both based on ACI US Inc.'s 4th Dimension relational database.

The iCat Commerce Publisher will convert text, images and tab-delimited data into HTML pages using customizable templates. Once the catalog is assembled, Commerce Publisher will export the complete database as hyperlinked HTML documents that can be viewed from any Web server.

When users place orders through the catalog, iCat Electronic Commerce Exchange, a

See iCat, Page 20

HELP WANTED

MACTEMPS HAS JOB OPENINGS ALL OVER THE COUNTRY. HERE ARE JUST A FEW:

Atlanta, GA

Technical Support

Mac generalist for multiplatform environment (Mac/Windows). Ethernet, Novell network. System 7.5, strong SCSI devices knowledge.

Job #6437 .....$18-22 / hour

Boston, MA

Web Designers/Masters

Java, HTML, CGI, QuickTime, Shockwave, other video/audio web & multimedia technologies. 2 to 5 years in graphic design with an agency. UNIX helpful.

Job# 13870 .....$18-$30 / hour

Multimedia/New Media/Interactive Specialists

Macromedia Director (Lingo expert), Shockwave, 3D modeling, VRML, GUI, interactivity (user controlled media, scored tests, etc.) a must. CD-ROM development experience too.

Job# 13870-1 .....$20-$35 / hour

Chicago, IL

Technical Support

Upgrade project from Windows 3.1 to Windows '95. Software upgrade, inventory.

Job# 10233 .....$15-17 / hour

Denver, CO

Project Technicians

3-4 techs needed to test software localization project, verifying programs, working with translation specialists.

Job# 4441 ..... $15 / hour

Database Administrator

MS Access expert to design and tweak existing database, standardize data, perform queries, customize & generate reports.

Job# 4415.....$20 / hour

Programmer

Recoding application developed in MS Visual C++ for Windows to C++ on the Mac. Need to know C++ and toolbox & be able to work with MS Visual C++ code.

Job# 4414.....$45 / hour

Detroit, MI

Help Desk Assistant

Support end users at schools using client's custom internet access software. Assistance provided over the phone.

Job# 6716.....$10 / hour

Database Programmer

Complete redesign of a 4D database. Add procedures, write scripts.

Job# 7142.....$25 / hour

Technical Support

Troubleshoot printing and software problems Mac/PC network.

Job# 6820.....$25 / hour

Houston, TX

Technical Support

Work for a "Big Six" accounting firm. Mac platform, troubleshoot h/w, s/w, work with PowerBooks. Some DOS/Windows. Support MS Office and TCP/IP.

Job# 3667.....$30-35K / year

Los Angeles, CA

Technical Support

For Creative Services dept. Maintain, troubleshoot Macs & Windows machines. Work with scanners, Fiery printers, multimedia, the Web, A/V systems. Need graphics skills.

Job# 15361 .....$20-25 / hour

Technical Support

General h/w, s/w installation and maintenance. Strong Mac and PC knowledge required. Networking a plus.

Job# 15180 .....$17-20 / hour

Technical Support

3 years experience supporting office environment. Maintain mostly Mac network. Backup procedures, LAN/WAN experience helpful.

Job# 15420 .....$18-25 / hour

Technical Support

In Creative and Admin. depts. of architectural design firm. Support AutoCad, networking, UNIX, & graphic design software. Fast paced environment.

Job# 15399 .....$18-25 / hour

New Jersey

Mac Programmer

Working in C for Mac creating video data application. Software will be converted later for non-Mac OS and localized for Arabic.

Job# 3259 .....$30-50 / hour

New York

Systems Generalist

Mac network. Large Ethernet LANs. UNIX, NetWare, ccMail, and MS Office required.

Job# 10074.....$25 / hour

Help Desk

Tier 1 support for large publishing house. Quark, Illustrator, Photoshop & general h/w and peripherals issues.

Job# 8653.....$22 / hour

Orange County, CA

Macintosh Programmer

MS Solutions Provider needs work on comm part of their application. C++ & AppleScript. File transfer, management of PC/Mac & Mac/Mac conversion. Comm toolbox a must. FoxPro helpful.

Job# 3791 .....$30-120 / hour

Philadelphia, PA

Lingo Programmer

Work in Director for consulting firm.

Job# 5525 .....$22-24 / hour

Philadelphia, PA (Cont.)

PC Systems Specialist

Basic troubleshooting. Networking experience helpful.

Job# 5480.....$15 / hour

Help Desk/Product Support Specialist

Mac & Windows, handle service requests over phone and at end-user station.

Job# 1083.....$21-$24K / year

Help Desk/Product Support Specialist Team Leader

Mac & Windows, monitor service requests in the call center.

Job# 1083.....$28-32K / year

Translation Engineer

Mac & Windows. Program software localization utilities. Compile international s/w packages. Borland, Amiable RLM and ResEdit.

Job# 1083.....$30-35K / year

Philadelphia, PA (Cont.)

Quality Assurance Manager

Mac & Windows, work closely with engineering to ensure quality of product. Maintain, fix and generate OEM software.

Job# 1083.....$30-35K / year

Mac Programmer

3 yrs experience with C, C++ & Pascal. Code Warrior a plus. Working with AppleShare and TCP/IP protocols. Open Transport in client/server environment. Finance or brokerage knowledge a plus. Ongoing development and support of market trading software.

Job# 5665.....$60-90K / year

Phoenix, AZ

Network Consultant

Banyan Vines 5.5.4. Need to maximize transfer rates for Mac-Mac, Mac-PC and Mac-UNIX. Need consulting on best software for the job.

Job# 1059 .....$25-40 / hour

Mac Programmer

Aircraft simulation game. Think C and HyperCard for Mac required. Debug during final testing. 3D Audio and Focal Point a plus. Stats background needed because s/w collects data for research project.

Job# 1053 .....$30-50 / hour

Technical Support

For pre-press, h/w and s/w support. QuarkXPress, PageMaker, Illustrator, Freehand, Photoshop & MS Office. AppleShare, Ethernet, other network experience a plus. Relocation considered.

Job# 1057 .....$17-20 / hour

San Diego, CA

Database Administrator

Progressive multimedia firm needs experienced 4D programmer.

Job# 4031 .....$20-30 / hour

Lingo Programmer

Director professionals with at least a year of professional experience with Lingo, SQL or database experience a plus.

Job# 4051 .....$15-25 / hour

San Francisco, CA

Technical Support

Mac LAN with PC clones. AppleShare, Ethernet, UNIX, TCP/IP. Word, Excel, FileMaker, FrameMaker, PageMaker, Illustrator, Photoshop, QuickMail, Eudora, & Retrospect.

Job# 6575.....$17 / hour

Systems Administrator

Mac LocalTalk network, linked FileMaker Pro 2.2 & ACT! databases. Ethernet, FileMaker Pro 3.0, & dedicated server in future. Manage backups, 401K reporting, report writing for HR consulting firm.

Job# 6422.....$25 / hour

Sr. Programmer

Develop bibliographic database running on 32-bit Windows & Mac systems. C/C++ for Mac required. Experience with Toolbox, TextEdit, Script Manager, WorldScript and File Manager. GUI knowledge & cross-platform development experience is a plus.

Job# 6608 .....$25-50 / hour

Santa Clara, CA

Field Engineer

PC and Mac installation, repair & maintenance. Hardware and software testing, training & research.

Job# 4055.....$20 / hour

Software Localization Specialist

Localize software for 24 languages. Must have prior experience. Not a development position. Entry-level engineers will be considered.

Job# 4041 .....$40K / year

MIS/Data Systems Consultant

Consult on and construct a system (networked database or other) so any client station has access all account info for online publishing house. Customers should be able to dial into sales and place orders via the Web. Possible future web site development.

Job #4000 .....$25-50 / hour

Mac Programmers

C/C++, Code Warrior and MPW. Develop comm software. ISDN, modem technology, & comm toolbox a must. 5-6 perm positions including a Sr. Engineer.

Job #4277.....$50-75K / year

Mac Programmers

Using C++, Code Warrior and MPW. Multimedia graphics knowledge including QuickTime and QuickDraw required. Drag & Drop technology. Several long-term openings.

Job# 4284 .....$25-60 / hour

Technical Support

2 positions. Support customers using communications software to connect to multiple platforms. Internet knowledge needed.

Job #4286 .....$15-17 / hour

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Apple updates Internet Kit

By James Staten

While news of its overall Internet strategy may still be a ways off, Apple isn't leaving Mac users without client-side solutions. The company last week updated its Apple Internet Connection Kit, adding the latest versions of all its included tools plus System 7.5 Update 2.0.

Version 1.1 of the Apple Internet Connection Kit (AICK) costs $59, which is $10 more than the original release. Like its predecessor, AICK 1.1 comprises a suite of third-party client applications along with a custom setup program that speeds configuring and connecting to an Internet service provider.

The upgrade includes Version 2.01 of Netscape Navigator; Version 3.0 of Jim Matthews' FTP client, Fetch; Version 1.0v3 of Claris Corp.'s Emailer Lite, which is now compatible with Open Transport; and Version 2.1.2 of John Norstad's Usenet news reader, NewsWatcher.

New Apple software in the package includes System 7.5 Update 2.0; MacPPP 2.5; a collection of Internet Apple Guides; and a new version of the Apple Internet Dialer, a configuration and setup tool.

Upgrades are $19 when purchased from Claris by calling (800) 950-5382 and free when downloaded from Apple's AICK Web site at http://www.online.apple.com/kit1/.

AICK is now bundled with all new PCI-based Power Macs. □

INTEGRATE MACINTOSHES – with – Sun/SGI/HP

K-AShare – allows Macintosh computers to use a UNIX host as an AppleShare file server.

K-FS – enables UNIX users to access AppleShare volumes on a Macintosh.

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Server to the Macs...

iCat

From Page 18

back-end processor, will step in to handle the transaction. Exchange will include transaction-processing technologies from CyberCash Inc. of Reston, Va., and Checkfree Corp. of Columbus, Ohio. These systems encrypt and process credit card and debit-account payments. Exchange will also include a search engine and maintain user shopping lists.

Interactive Catalog said the iCat suite will let users set up electronic storefronts much faster than other systems. iCat President Craig Danuloff said users currently have to piece together commerce systems using tools from various third parties, then figure out how to get all the tools to communicate with each other.

The Edutainment Co. of Boulder, Colo., is using the iCat suite for its on-line software sales. "We don't have the HTML expertise on staff to create a custom electronic catalog," said Marty Grosjean, president. "We already have the text and images for our printed catalog, so all we have to do is download [the files] into [iCat's] system, then upload it to the Web."

Between May 1 and Aug. 30, iCat Electronic Commerce Suite will be priced at $1,495 for one-at-a-time catalog creation and transaction processing. Users will be able to purchase single-user versions of the Commerce Publisher separately for $795. After Aug. 30 the single-user suite will rise to $4,995, and Publisher, sold separately, will be $2,499. A license allowing two users to work on the catalog simultaneously and three transactions to be processed at a time will be $9,795.

Interactive Catalog said users will be able to purchase the iCat suite along with server space through Netcom On-line Communication Services Inc. of San Jose, Calif.

Interactive Catalog Corp. of Seattle is at (206) 623-0977; fax (206) 623-0477; moreinfo@icat.com; http://www.icat.com. □

Java

From Page 18

a source-code editor, interpreter, compiler, debugger and runtime engine.

The update will also include Sun's Java Development Kit and pre-release tools for interface development and a visual source-level debugger.

Roaster will cost $299; registered owners of Release 1 will receive the update free.

Metrowerks Inc. of Austin, Texas, is at (512) 873-4700 or (800) 377-5416; fax (512) 873-4901; info@metrowerks.com; http://www.metrowerks.com.

Natural Intelligence Inc. of Cambridge, Mass., can be reached at (617) 876-4876 or (800) 739-1616; fax (617) 492-7425; info@natural.com; http://www.natural.com. □

Global

From Page 18

mand Z, a graphics production company. "You don't have to go through that setup rigamarole with the other person's modem. It cuts down on the time and frustration involved in doing a modem-to-modem communication."

GlobalTransfer works with modems supporting speeds of 14.4 Kbps or faster; Global Village modems are not required, and the company said it will not bundle GlobalTransfer with its modems. A Windows version will ship this summer.

Global Village Communication Inc. of Sunnyvale, Calif., can be reached at (408) 523-1000 or (800) 469-9892; fax (408) 523-2407; http://www.globalvillage.com. □

E-mail

From Page 18

$3 per user and $95 per server.

Quarterdeck said it plans to release Version 4.0 of Quarterdeck Mail in August. This update will support styled text and automatic launching of enclosures, include a spelling checker, and run native on Power Macs.

SoftArc Inc. said its forthcoming version of FirstClass, Version 3.5, will include a client off-line mail tool, and the server will support SMTP (Simple Mail Transfer Protocol), MIME (Multipurpose Internet Mail Extensions) and NNTP (Network News Transfer Protocol) services.

Pricing for FirstClass 3.5 will start at $495 for a five-user license plus the server; upgrades will be free.

Quarterdeck Corp. of Marina del Rey, Calif., is at (310) 309-3700 or (800) 683-6696; fax (310) 309-4217; info@quarterdeck.com; http://www.quarterdeck.com.

SoftArc Inc. of Markham, Ontario, is at (905) 415-7000 or (800) 364-1923; fax (905) 415-7151; sales@softarc.com; http://www.softarc.com. □

DEVELOPER BEAT

It's elemental. Neuron Data Inc. of Mountain View, Calif., said it expects to ship the Mac version of Elements Environment 2.0 by year's end. The component-based development environment will include Internet hooks and let developers integrate components from various object models into one application. Phone (415) 528-3450; fax (415) 943-2752; info@neurondata.com; http://neurondata.com.

Sprucing up the interface. Water's Edge Software this month shipped Version 3.0 of its Tools Plus package of application-development libraries. The update from the Oakville, Ontario, company includes components for building 3-D user interfaces and ships with the company's SuperCDEFs collection of controls. Prices start at $149. Phone (416) 219-5628; fax (905) 847-1638; wateredgsw@aol.com.

C tools update. Boulder, Colo.-based XVT Software Inc. is now shipping Version 4.5 of its Development Solution for C. The update to the cross-platform development environment lets users create localized versions of their applications. The tool kit costs $2,325 for Mac and Windows machines and $7,500 for Unix boxes; customers with maintenance contracts can upgrade free. Phone (303) 443-4223 or (800) 678-7988; fax (303) 443-0969; info@xvt.com; http://www.xvt.com.

Open for business. Xplain Corp. last week launched Developer Depot, a mail-order catalog targeting Mac developers. The Westlake Village, Calif., company said the catalog will be available in both printed and on-line versions and will be included in the May issue of the company's MacTech Magazine. Phone (805) 494-9797 or (800) 622-3381; fax (805) 494-9798; orders@devdepot.com; http://www.devdepot.com.

— By Clifford Colby

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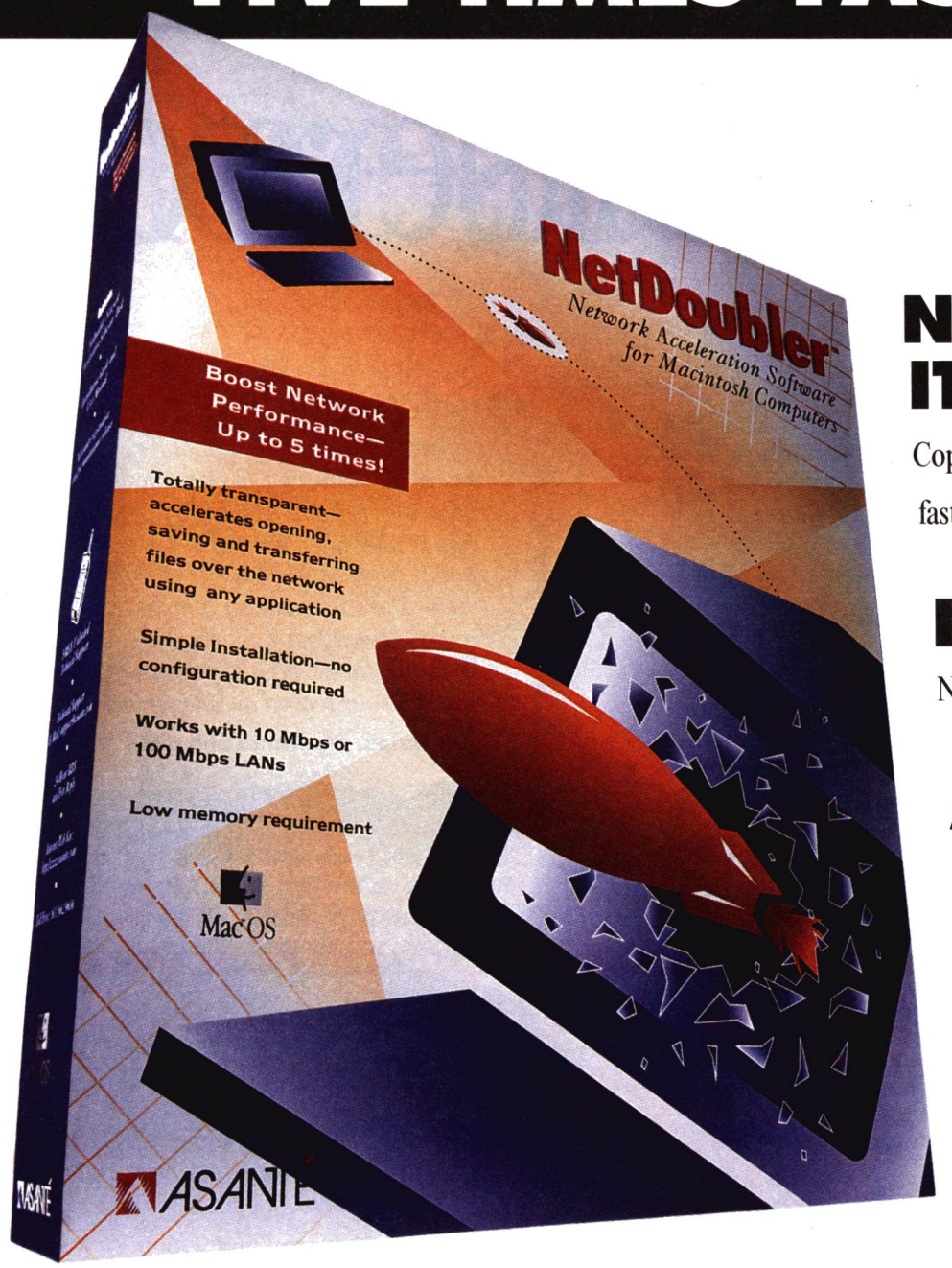
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Apparently, we're not th 56 million users constit

"Leadership in the software industry requires a strong commitment to cross-platform support. Oracle will continue to invest in supporting the Apple platform to further our position as the world's leading supplier of information management software."

Larry Ellison, Chairman and CEO, Oracle Corp.

"Microsoft has just introduced the award-winning Microsoft Internet Explorer for the Macintosh, and is hard at work on great new versions of Microsoft Office, Microsoft FrontPage and many other titles. We're also committed to continued interoperability between Windows NT Server and the Macintosh. Since 1984, Microsoft has been committed to its Macintosh customers and the Macintosh platform. We look forward to introducing a significant number of new and improved products as we continue our second decade on the Mac."

Bill Gates, Chairman and CEO, Microsoft Corp.

"Macromedia and Apple have worked together for ten years to develop the market for graphics, multimedia and video. The Macintosh continues to excel as a leading platform for creative professionals worldwide. Macromedia is committed to the Macintosh and the millions of customers that depend on it."

Bud Colligan, Chairman, President and CEO, Macromedia, Inc.

"Macintosh contributed to the first publishing revolution. This summer, when we introduce our Internet and multimedia design tool, QuarkImmedia, users can capitalize on the next revolution: interactive publishing. Macintosh is one of many important tools for our customers and Quark will continue to develop software for them."

Tim Gill, Chairman and Senior Vice President of Research and Development, Quark, Inc.

"Corel is excited about the business prospects we see for supporting the Macintosh platform. Over the next few months, we will be releasing CorelDRAW for the Mac, as well as continuing to enhance OfficeSuite and our many other products for the Mac. We think the Mac will play a major role in our future."

Michael Cowpland, President and CEO, Corel Corp.

"Intuit views the Macintosh as a key platform for our consumer and small business software products. As the developer of top-selling Macintosh applications such as Quicken, MacInTax and QuickBooks, Intuit is fully committed to the Macintosh."

Scott Cook, Chairman, Intuit

"At Edmark, the Macintosh is an important platform, thanks to its wide use in both the home and education markets. We are committed to developing high-quality educational software for the Mac, and have a very exciting summer and fall season of new products. We look forward to its continued success."

Sally Narodick, CEO, Edmark

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e only ones who think utes more than a niche.

"The Macintosh has always been and will continue to be a critical component of the Notes cross-platform strategy. We will continue to keep it at full parity with our Windows client platforms."

Jeff Papows, Executive Vice President and Chief Operating Officer, Lotus Development Corp.

"Brøderbund Software remains strongly committed to the Macintosh platform. Over the years, we have delivered many exciting and market-leading products for Macintosh, and it is an important component of our strategy today. The Macintosh provides a quality experience that matches up well with the quality we always strive to deliver to our customers."

Doug Carlston, CEO, Brøderbund Software, Inc.

"America Online got its start with Macintosh, and we continue to make significant investments to serve the 1 million Mac members we now have. When we release AOL 3.0 later this year, it will be clear to all that the 'Mac is back' at AOL!"

Steve Case, Chairman and CEO, America Online, Inc.

"For all aspects of information publishing, Adobe and our customers prefer the Macintosh. The Mac's ease of setup and use distinguish it among personal computers. Adobe will enthusiastically support the Mac with our applications now and in the future."

Dr. John E. Warnock, Chairman and CEO, Adobe Systems Inc.

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BPA INTERNATIONAL

R&D and the Mac advantage

With the departure of David Nagel as head of Apple's R&D efforts, CEO Gilbert Amelio once again faces hard choices as Apple churns toward a make-over of its mission and its market.

Nagel's group has had mixed success, although it hasn't always gotten appropriate recognition for the things it did well. R&D steered the Macintosh platform to a new chip architecture with a minimum of fuss, engineered a wildly successful multimedia standard in QuickTime, and consistently updated the Mac hardware and operating system to take advantage of emerging technologies.

Most significant on the debit side of the ledger are OpenDoc and Copland. The former has not been the overarching success Apple and its partners had hoped for, and Copland — what was to have been Nagel's crowning achievement — continues to be bogged down with schedule and resource problems.

The biggest issue with the R&D group has been its role as the lead booster of Apple's home-grown technologies. Third-party developers continue to shake their heads at Apple's blind loyalty to things such as QuickDraw GX and PowerTalk. Those who have chosen to support these wayward technologies have more often than not been saddled with minimal returns on substantial investments.

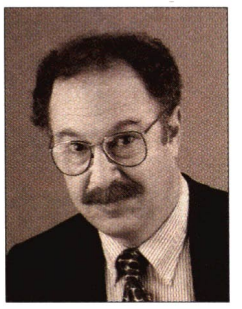
This is the big challenge that Amelio faces in choosing and guiding a successor to Nagel — tempering the "not-invented-here" attitude that is endemic to R&D. Creating new technology opportunities is a crucial role for Apple, but they must be based in a fiscal responsibility to both the company and its developers.

If Amelio wants to restore quality and value to Apple, he must understand that it starts with R&D. The projects that arise from this group must demonstrably contribute not only to Apple's bottom line but the bottom line of its developers. It is only in tandem with them that Apple will be able to continually raise the Mac advantage. □

THE SECOND DECADE HENRY NORR

Some beginning steps for Netward migration

Apple CEO Gilbert Amelio this month said that he plans to focus the company's energies on "migrating to an Internet-based computing architecture." I trust we'll eventually find out what that means; in the meantime, I have a couple of suggestions.



First, beef up Apple's presence on the Web. I don't mean create more sites — on the contrary, there are far too many already, with too many neglected pages and no discernible overall structure. But the biggest problems are overcrowding and poor performance. These are serious issues all over the Web, but Apple's sites are among the worst I visit: In recent weeks, when I've tried to check in to one or another of them, I've been turned away as often as not. (The company's decision to give away system update CD-ROMs, welcome as it was, doesn't seem to have alleviated traffic congestion much.)

This doesn't make much of an advertisement for the Apple Internet Server Solution line. And it's especially irritating at a time when the company is sitting on more than a billion dollars worth of unsold Macs. Why not take a few hundred units, load up Quarterdeck Corp.'s WebStar and set them up as clusters of backup servers that kick in when the primary hosts are swamped?

Ask Apple

My other suggestion concerns electronic tech support. A little-noted aspect of the demise of eWorld was the disappearance of Ask Apple, a forum where users could pose problems to company technicians without wasting their time trying to reach someone at Apple's telephone tech support line. Unfortunately, Apple hasn't recreated that service on the Web or anywhere else (its forums on CompuServe and America Online don't take questions). That leaves the company in this respect far behind its key competitors. Microsoft Corp. and most leading Wintel hardware vendors have on-line support forums.

The irony here is that on-line support, by all accounts, saves vendors substantial sums, in addition to increasing customer satisfaction. You could call it a win-win proposition, but that's no reason to leave it to Windows.

Win or lose

Speaking of Windows, Apple recently released Version 3 of its "Macintosh or Windows?" video. There are no great revelations in it. The arguments are the same ones Apple has been making for years, with obviously mixed results, and the presentation remains numbingly staid. (I noted only one concession to the video age: a sweeping-second-hand special effect used occasionally to denote the passage of time.)

Still, the 25-minute tape is a cogent and comprehensive statement of the case for Mac, and platform champions might find it useful ammunition. For a free copy, call (800) 825-2145 and ask for item L01760A. My only substantive reservation: Its discussion of the Mac as an Internet platform is too brief and focuses almost exclusively on embedding Cyberdog parts in OpenDoc container applications — a pitch that might make sense in a year but doesn't have much to do with the here and now. □

Henry Norr, editor emeritus of MacWEEK, welcomes feedback in the MacWEEK forums on CompuServe or at henry_norr@macweek.com.

LETTERS

Wretched registries

After reading Henry Norr's column on cleaning up the System folder (04.08.96, Page 22), I was left with a bad taste in my mouth. The idea that Apple should/might/could include a registry is counterproductive, if not downright sadistic.

I can only surmise that this idea was encouraged by Microsoft Corp.'s use of them. And indeed, a registry could be a good idea if it were not for the fact that registries get damaged, and when they get damaged, your machine does not work right — if it will work at all. The idea that anyone can come along and update this proposed registry is trusting beyond the call of sanity.

On a network of 70 Macs, 10 Intel-standard clones and a Windows NT server, I have come across a handful of corrupted registries. On the occasions I have been forced to call Microsoft, it has recommended removing them so a new one can be created. One can readily surmise that an empty registry is not very useful, although your software may appear to work.

The introduction of a unique file number system would probably be more productive. Although the thought of adding a resource and creating a database of numbers to use is not trivial, the computer would not have to be reconstructed from scratch because one file, the registry, was damaged.

Thomas Walsh, PC support specialist
General Electric Co., Burlington, N.J.

Invest in Reply

I strongly agree with MacWEEK's editorial that Apple should not compete with Reply Corp. in developing Intel-standard PC compatible cards (04.15.96, Page 30). Developing a PC add-on board means supporting Intel Corp. and Microsoft Corp., Apple's competitors. Apple should use those R&D funds to make a minority investment in Reply. By doing so, Apple can help Reply to become a stronger developer and may even be able to share some profit from Reply's success. I have a challenge to Reply: How about a PCI Mac compatible card for a standard Pentium PC? IS will love you.

Spencer Yu, chief financial officer
PharmaDesign Inc., Warren, N.J.

Volume matters

Apple may seek to become the MagLite of Mac OS machines (04.08.96, Page 1), but why should we think the clone makers will play ball? Look at what DayStar Digital Inc. and Power Computing Corp. are doing, what Radius Inc. tried, and what UMAX Technologies Inc. plans. With all of them focusing on high-end, high-margin systems, it seems ridiculous for Apple to drop the high-volume Performa line. If anything, the one place these manufacturers can compete with Apple is in the premium market. High-end Apple and low-end cloners is a match made in heaven — but only in heaven.

John T. Nack

Follow SGI's lead

A recent Mac Manager column talked about Apple having a real shot at improving software distribution mechanisms and setting a standard for the industry (04.01.96, Page 22). For some time now, Silicon Graphics Inc. has not only distributed software via its Web server but also, as an option, the software is actually installed on your machine. How is that for service! If Apple could do this, it would go a long way toward improving its support image.

Al Good, senior programmer
Science Applications International Corp.
San Diego

Give it to IS

One point in considering your stories on IS managers who are eliminating Macs (04.01.96, Page 1) is so obvious that I'm astounded nobody has raised it. If everyone used Macs, the average IS department could probably be downsized by about 50 percent, due to the vast decrease in setup and training complexity. How many IS managers are really interested in having an installed base of easy-to-use computers? Someone might notice how redundant the IS department is.

Shalom Rackovsky, associate professor
Mt. Sinai School of Medicine, New York

Duh, IS gets it

In an editorial you state that "IS managers seem unfazed by the extra support costs that Windows demands" (04.15.96, Page 30). Well, duh. I recently watched three technicians spend a couple of hours trying to get a scanner hooked up to an Intel-standard PC running Windows 3.1. Clearly, IS managers know that reduced costs mean reduced budgets, which viewed bureaucratically is a bad thing. They're more concerned with their own job security than with saving money.

Bryan Cholfin

How to contact MacWEEK

Send letters to MacWEEK, 301 Howard St., 15th Floor, San Francisco, Calif. 94105; fax (415) 243-3651. We can be contacted on-line: CompuServe, 76077,1351; MCI, 323-1203; Internet, letters@macweek.com. Include your name, address and phone number. We reserve the right to edit for clarity and length.

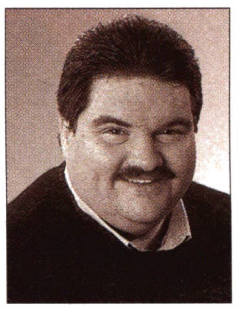
THE MAC MANAGER DON CRABB

Apple's Internet strategy begins with marketing

If I ever thought that a Windows 95 PC was almost as good as a Mac, I stand corrected. Thanks to my recent experience at installing and testing the ExpressNet Suite from Graphix Zone Inc. of Irvine, Calif., I have discovered what should be the centerpiece of Apple's Internet strategy: marketing.

Express yourself

ExpressNet is a particularly handy $49.95 CD-ROM, offering an Internet account, plus copies of Netscape Navigator 2.0; APTE's Internet Coach, an interactive primer that helps novices learn their way around the Internet; VocalTec's Internet Phone, which allows real-time voice communication over the Internet; plus a nice pile of Navigator plug-ins. Because the CD includes Mac, Windows 3.x and Windows 95 versions, it's particularly handy for Mac managers trying to get staff on the Internet from their homes.



The Mac installation was painless. I got it running on a Power Computing Corp. PowerWave 150 running System 7.5.3 and Open Transport 1.1; on a Power Mac 7100/80 running 7.5.2 and MacTCP 2.06; on a PowerBook 540c running Newer Technology Inc.'s 117-MHz PowerPC upgrade card, 7.5.3 and MacTCP; and on two PowerBook 5300 machines. No installation took longer than 10 minutes. I was able to write a simple installation read-me to give to my clients, and they then had it running on their 7500s and 8500s in about 15 minutes per machine.

Then I tried the Windows installation.

It took 10 times longer to install. Regardless of the Intel-standard computers I used (Gateway 2000 Inc. Solo and Liberty notebooks, a Dell Computer Corp. Latitude Xpi 133 notebook, a Hewlett-Packard Co. Pavilion 7090, a Dell Dimension XPS P166c, an IBM Corp. Aptiva A50, a Compaq Computer Corp. Presario 9660 among others) the installations were all extremely painful.

Trying it with Windows 3.x produced a variety of modem and setup errors that would make a nice exegesis on what a piece of crap Windows 3.x is with dial-up networking. With Windows 95 the installations got much farther along before they died — usually because of errors trying to modify a dial-up resource that didn't much like being modified.

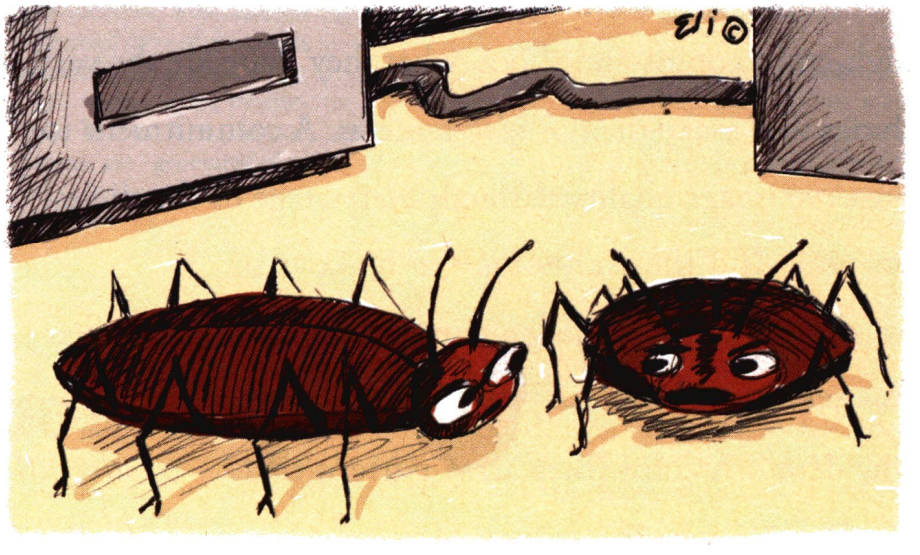
Let me make something clear — the problem was not with ExpressNet Suite. The problem was with Windows and how it handles exceptions during installation, and especially how it handles them during dial-up networking installations).

Vive la différence

With the easily demonstrated differences between installation and setup when it comes to any Internet, intranet or Web services on Macs vs. Windows, the centerpiece of Apple's upcoming Internet strategy announcements ought to focus on these basics.

Rather than concentrating on the heady stuff we might expect (such as all-out Java support, OpenDoc plus Cyberdog and Mac OS-specific intranet objects for developers), Apple's emphasis ought to be a *marketing* campaign that gets every current and potential Apple customer thinking about how much easier, cleaner and faster any Internet, intranet or Web installation goes on a Mac. Even for the most die-hard Windows fans, that's the painful truth. □

Don Crabb welcomes comments at his Internet address decc@cs.uchicago.edu. You can also check out his home page at http://cs-www.uchicago.edu/~decc/.



"Personally, I don't trust this RAID technology."

Comments? Ideas? Contact Eli at elitoons@aol.com

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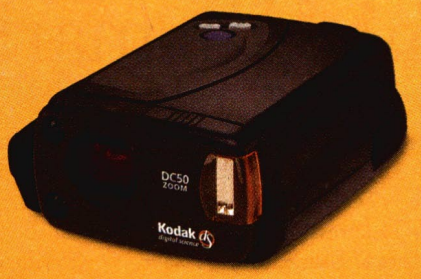

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Choose a monitor, any monitor — you can't go wrong

By Larry Stevens

Despite lower prices, the cost of larger monitors is still somewhat prohibitive.

One advantage of the ho-hum monitor market is that no matter which large-screen display you choose, you're not likely to make a serious buying mistake.

You can buy a 20- or 21-inch monitor from Apple or more than a dozen other companies, including Sony Electronics Inc., ViewSonic Corp., Radius Inc., Panasonic Peripheral Computer Co., NSA-Hitachi Ltd., NEC Technologies Inc., Eizo Nanao Technologies Inc. or Mitsubishi Electronics America Inc. (see chart, Page 29). But the fact is, the majority of monitor tubes in the Mac market are manufactured by only three companies: Sony, Hitachi and Mitsubishi.

"Let's face it. Most monitor makers are using the same components," said Scott Bowman, director of research and development at Alan Lithograph Inc. in Inglewood, Calif. "So you shop by service and reputation and price."

For those reasons, he chose to outfit the 30 Macs in his service company with large-screen monitors from Radius. Despite Radius' recent financial problems, however, Bowman hasn't noticed any changes or customer service problems. "Of course, the company's problems do concern me," Bowman said. "You want to think a company you buy from will be around as long as you are. I've [used] Radius [products] since the middle 1980s and I've seen them weather many storms. Second, their monitors have, I think, a technical advantage."

Bowman said he believes that because the Radius monitors use common components, local, non-Radius technicians have no problem servicing them. "So far, in terms of Radius warranty work, it is as good as it's always been," he said.

The big picture

Increasingly, users are seeing large-screen monitors as more of a necessity than a convenience. For those who work on oversize documents, the ability to see more of the picture can translate into measurable productivity gains.

Cost is still a primary factor in the growing acceptance of large-screen displays. Dropping prices are moving them closer to the commodity, rather than the luxury, category. But they're not there yet. True, the average cost of large-screen displays is about 25 percent less than the cost of models sold two or three years ago. But you'll still pay a minimum of $1,500 for a 20-inch monitor — which can display just shy of two 8.5-by-11-inch pages in WYSIWYG. And for a true two-page display (21 inches), you'll have to shell out at least $400 more.

Those prices may represent a breakthrough for graphic artists who find that the time they save on tedious redraws in Adobe Photoshop can justify the price of a larger monitor. But business users who would like to see more spreadsheet cells or display additional windows on their screens may find it harder to justify the high cost.

Martin Reynolds, senior analyst at San Jose, Calif.-based Dataquest Inc., said that $1,500 to $2,000 is "still too high to attract many corporate business users."

Large-screen displays do cost, after all, more than twice that of some comparable 17-inch models. And 17-inch monitors are becoming more popular among business users. Still, Reynolds said: "Prices will continue to drop. And the more they do, the more [large-screen displays] will proliferate."

Better price, better looking

Just as prices slowly drop, monitor designs continue to slowly improve. Today's machines have generally brighter and sharper display, are more distortion-resistant and glare-resistant, and last much longer than those of a few years ago.

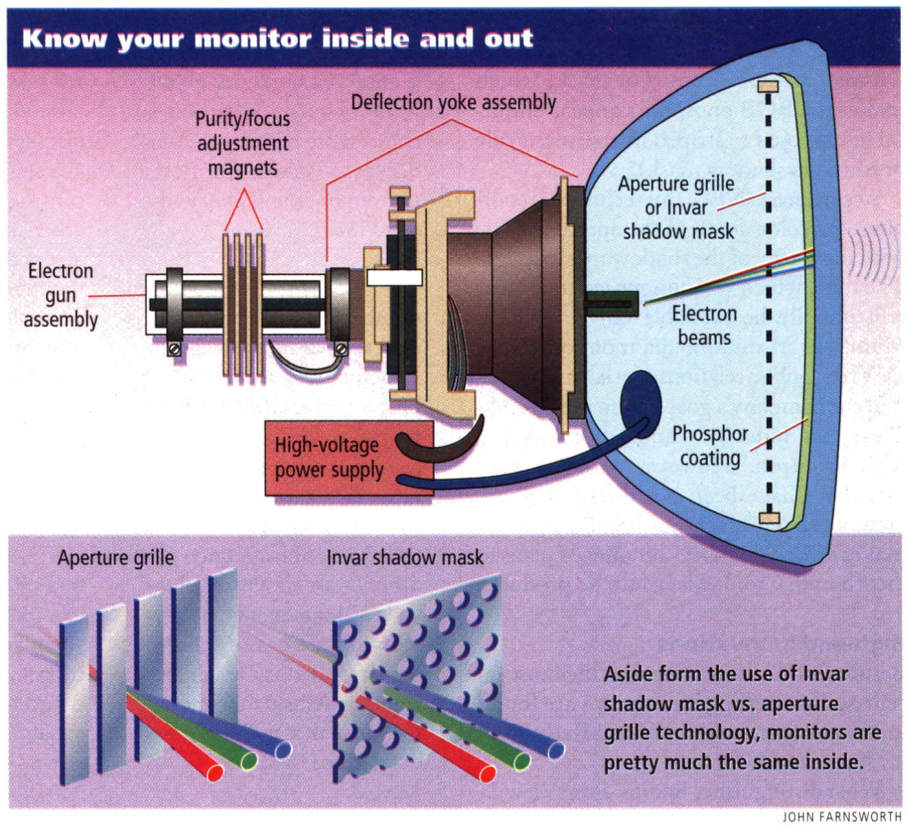
So while many of the components are the same, as Bowman stated, the market isn't that simple. First, there are two distinct and competing monitor technologies: aperture grille and Invar shadow mask. Second, NEC has just announced a third technology it calls a slot mask, which, although not available in large-screen displays, may ultimately challenge the other two technologies. Finally, some monitor companies, most notably Sony and Radius, distinguish their high-end products with new color-calibration features.

The two basic monitor technologies to consider are Invar shadow mask and aperture grille. Invar shadow mask has the upper hand in the Mac market; aperture grille CRTs tend to be brighter and provide better contrast because the grille lets more light through. Invar shadow mask CRTs, on the other hand, are less likely to display moiré, a swimming effect or slight blurring that may result when the display contains closely spaced lines (see story below).

Most experts warn that your buying decision has to take into consideration subjective factors, such as how your own applications look on that screen.

"I happen to prefer [Sony] Trinitron for all types of work," said Dataquest's Reynolds. "But it's really a matter of taste." Accordingly, he advises checking out each screen with the primary application for which you intend to use it and to try to shop

See Monitors, next page


Know your monitor inside and out
Purity/focus adjustment magnets
Deflection yoke assembly
Aperture grille or Invar shadow mask
Electron gun assembly
Electron beams
High-voltage power supply
Phosphor coating
Aperture grille
Invar shadow mask
Aside form the use of Invar shadow mask vs. aperture grille technology, monitors are pretty much the same inside.

JOHN FARNSWORTH

Behind every monitor is more than a tube and lots of wires

By Jeff Pittelkau

Buying a monitor? Be prepared to learn more than you'll ever need to know.

At the heart of every monitor is a cathode-ray tube. Inside the front of the tube is a patterned layer of phosphors that emit red, green and blue light when excited by electron beams. The electron beams are generated and precisely focused by the guns at the rear of the tube. Near the front is either a shadow mask or aperture grille that allows electrons from each gun to strike their intended phosphor.

There are two basic tube types: shadow mask and aperture grille, each defining the core mechanism by which the electron beams are aligned within the tube. A shadow mask is a thin sheet of metal perforated with a special pattern of holes that carefully align with the phosphor dots on the front of the tube. An aperture grille accomplishes this same task with an array of thinly stretched wires.

The shadow knows

In the past, shadow masks were plagued by uniformity problems caused when the mask would expand and distort from heat buildup during operation. An alloy called Invar alleviates this problem.

Because aperture grille wires are stretched, they are not affected by heat during use. However, they need to be stabilized from vibration with thin horizontal wires, which disrupt the flow of electrons to the phosphors, producing thin shadow lines on the displayed image.

Aperture grille tubes use phosphor stripes and shadow mask tubes use phosphor dots.

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Monitors

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where you can get a 30-day return guarantee.

The newest monitor technology is NEC's slot mask, but so far it's available only in 15-inch and 17-inch tubes. NEC's CromaClear CRT uses slot mask, which makes the RGB phosphors appear elliptical (as opposed to striped in aperture grille or round in shadow mask).

According to NEC, this technology combines the color depth of the aperture grille with the clarity of the shadow mask design. The tube, which was announced in March, will initially be available only in NEC's MultiSync M multimedia monitors. Dave DeVries, public relations specialist at NEC, said the company's goal is to make CromaClear "an industry standard, competing with Trinitron." However, as of this writing, there have been no independent reviews of the product, nor has any monitor maker other than NEC announced plans to incorporate CromaClear into its products.

High-end innovations

Besides NEC's new offerings, the most recent and interesting innovations are found in the monitors that Sony and Radius sell for less than $4,000.

What distinguishes Radius' PressView 21 SR is its new software, ProSense, which gives users control over such things as size, position, convergence, tilt and moiré. ProSense also supports virtually all systems, including ColorSync 2.0 from Apple; the Kodak Color Management System from Eastman Kodak Co.; and FotoFlow from Agfa, a division of Bayer Corp. Also, ProSense includes Radius' ColorMatch Photoshop separation tables for creating a monitor profile. These color-matching features were important to Alan Lithograph's Bowman when he was shopping for large-screen displays.

"We work with a lot of different companies and different types of files," he said. "Color matching is essential."

Sony's 20-inch true-color reference monitor, the Multiscan TC, includes a beam current feedback (BCF) system, which ensures the stability of color by taking measurements of the consistency of the phosphors and then adjusting the display to provide constant white and black levels. It also matches the color and brightness of areas on the periphery of the screen with that of the center.

BCF technology was a major reason MetaTools Inc., the Carpinteria, Calif.-based maker of Mac special-effects products such as Kai's Power Tools, purchased the Multiscan TC. Kai Krause, MetaTools co-founder and senior science and design officer, usually works off-site and sends files to the office via modem.

"It's extremely important that the color we see on our screens is the same as the color Kai saw on his screen," said Doug Sillers, production coordinator for the company. In Sillers' estimation, the Multiscan TC provides the best color stability of any monitor available in the Mac market.

Of course, Sony's and Radius' high-end models are geared toward graphics professionals, not business users. And for the rest of this year, at least, that will also be the primary market for all large-screen displays. □

Take control of your screen

The larger the tube, the greater the tendency for all forms of image distortion, so controls are critical on 21-inch displays. Here are the most important ones and why you need them.

Purity — Magnetic fields produced by the earth and things next to your monitor can sometimes cause electron beams to miss their intended target, producing a strange color cast on the surface of the tube. This is usually seen as a color tinge in one corner that's the exact opposite tinge in the other — green-pink or blue-yellow, for example. Better monitors have purity control, which regulates a small electromagnet inside the monitor's case that nullifies the deleterious field.

Convergence — The three electron beams inside your monitor should be spot-on with each other. If they're off somewhat, overall sharpness of the image is reduced. If they're off by a lot, you'll see faint tinges of color around the edges of objects displayed on your screen. The simplest convergence controls let you adjust red, green and blue gun alignment across the entire surface of the tube either horizontally or vertically. But because of manufacturing intolerances, convergence isn't the same everywhere, so the best monitors will let you adjust convergence in smaller zones across the displayed image area.

White point — Most monitors ship from the factory set to a D93 or D65 white point. If you plan to do a lot of color-critical work where you'll be checking what is displayed against what is printed, you'll also need a monitor with a D50 white-point setting.

Very few monitors offer this setting as a default, but most will let you tweak your display to get close by using separate red, green and blue gain controls. Better yet, to avoid the tedium of adjusting these controls and to get more precise results, get a calibrator from the monitor vendor or a third party, preferably one that supports Apple's ColorSync and any other color-management systems you may be using as part of your production process.

Rotation — The earth's magnetic field can distort your monitor's image in one other way — rotation. Depending on which direction you point your monitor, you may notice a slight rotation in the displayed image. A rotation control affects another corrective electromagnet inside your monitor's case, which corrects the displayed image.

Geometry — At a bare minimum, you'll need size and position controls to maximize and center the displayed image on the tube. All video sources are slightly different, so these controls are critical. The best ones are digital, since they remember settings for each resolution.

More-advanced controls correct for other types of distortion, such as pincushion (a slight bowing inward or outward of the displayed image), trapezoid or keystoning, and linearity (objects that appear taller or wider at one side of the screen than the other). On-screen menu controls are easier to use than knobs and buttons. But the easiest controls to use are those on premium monitors that include Mac software. These controls let you make adjustments that are communicated to the monitor with a serial cable connected to your Mac's printer or modem port. You'll need a free port to connect the cord.

Certainly, more controls are better, but the more there are, the easier it is to make adjustments that only make things worse. Before you adjust anything, make sure to check your monitor's manual for the reset button that restores factory defaults. — By Jeff Pittelkau

Inside

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The sharpness of the displayed image is primarily affected by the fineness of this patterned phosphor coating, measured by the stripe pitch or dot pitch, respectively.

Stripe or dot pitch is the measurement between two adjacent phosphor areas of the same color. In general, you want this measurement to be close to or smaller than your desired pixel resolution. On a 21-inch monitor, for example, this works out to about 0.35mm for 1,152-by-870-pixel resolution and 0.25mm for 1,600-by-1,200-pixel resolution. If the dot pitch is much larger than your displayed pixel resolution, detail will be lost and the images won't appear crisp.

Smaller dot or stripe pitch generally means sharper image quality. However, be careful when comparing dot pitch to stripe pitch. An aperture grille tube with the same stripe pitch as a shadow mask monitor's dot pitch will appear slightly sharper because its phosphors are vertical stripes and, thus, are unbroken in the vertical dimension.

Also, newer, premium shadow mask tubes use elliptical dots, which offer sharper and brighter images than traditional, round-dot tubes with the same dot pitch. In general, you should compare dot or stripe pitch only among the same type of tube.

Coming into focus

Another distinction in tube design is the type of gun that is used to generate and focus the electron beams. The precision of the gun design is critical on large-screen displays, since the electron beams travel farther before they strike the front of the tube. (Any imperfections in beam shape or focus are exaggerated on large displays.)

The most common distortion is astigmatism caused by the wide angle traversed by the electron beam as it scans across the face of the monitor. Near the center, this beam is perfectly round, but at the corners it can spread to a fuzzy oval shape unless the beam's shape is corrected by special lenses in the gun.

> A 21-inch display may have only a 19.5-inch viewing area. This is the number to compare.

The most common of these is what's called a double quadruple lens. It's easy to spot a monitor without one — image quality will be much fuzzier around the sides of the display than in the center. Also, better monitors use more precise (and more expensive) guns, yielding an overall sharper image.

Shadow mask and aperture grille displays are shaped differently. Shadow mask tubes tend to be spherically curved in all directions, whereas aperture grille tubes are cylindrically curved in the horizontal direction and are vertically flat. Both tube designs come in various quality grades, with the best and most expensive tubes being the flattest. Flatter tubes tend to have less distortion and glare.

Coat of armor

The front of most tubes is either coated with an anti-glare treatment or has one bonded to the front with special adhesive. These coatings can take several forms, and some even contain special materials that reduce emissions and eliminate static discharge. (This, more than anything else, helps to keep the monitor surface clean and dust-free.)

Anti-glare coatings come in several forms. The simplest is a dark tint that increases the contrast of the displayed image but doesn't reduce reflections. Anti-glare coatings — usually made from silica, which is sprayed on the tube to give it a slightly uneven surface — are common on some tubes. The best are anti-reflective coatings that cancel out reflections entirely.

In all cases, CRTs operate under very high vacuums, so the front of the tube is made from thick, heavy glass to keep the tube from imploding. This glass is so thick that the area of the phosphor coating inside is smaller than the actual tube size by one inch or more. So, don't be surprised if a 21-inch display has only a 19.5-inch viewing area — if maximum screen size is important to you, this is the number to compare. All monitor vendors are now required to provide this information. □

High-resolution color monitors under $4,000

COMPANY	PRODUCT	PRICE	CRT SIZE	VIEWABLE AREA	SHADOW MASK/ APERTURE GRILLE	DOT PITCH/ STRIPE PITCH	DISPLAY RESOLUTION[1]	REFRESH RATE[2]	ON-SCREEN MANAGER	COLOR CALIBRATION	WARRANTY
APPLE Cupertino, Calif. (408) 996-1010 or (800) 776-2333	**Multiple Scan 20 Display**	$1,999	20"	19.1"	Aperture grille	.26mm	1,280x1,024	75 Hz	N	S	1 year
ARTMEDIA USA Santa Clara, Calif. (408) 980-8988 or (800) 278-6334	**TN2185T**	$1,888	20"	19.1"	Aperture grille	.30mm	1,280x1,024	75 Hz	Y	None	3-year limited
EIZO NANAO TECHNOLOGIES INC. Torrance, Calif. (310) 325-5202 or (800) 800-5202	**FlexScan T2 20** **FlexScan F2 21** **FlexScan FX2 21**	$2,163 $2,081 $3,185	20" 21" 21"	19.1" 19.8" 19.8"	Aperture grille Shadow mask Shadow mask	.30mm .28mm .26mm	1,152x870 1,152x870 1,152x870	75 Hz 75 Hz 75 Hz	Y Y Y	S S S	3 years
MITSUBISHI ELECTRONICS AMERICA INC. Cypress, Calif. (714) 220-2500 or (800) 843-2515	**Diamond Scan 20H** **Diamond Scan 20LP** **Diamond Scan 20M** **Diamond Pro 21TX**	$1,799 $1,745 $1,699 $2,199	20" 20" 20" 21"	18.6" 18.6" 18.6" 19.7"	Shadow mask Shadow mask Shadow mask Aperture grille	.28mm .31mm .31mm .30mm	1,360x1,024 640x480 640x480 1,360x1,024	75 Hz 75 Hz 75 Hz 75 Hz	Y N N Y	S None S S	3 years
NEC TECHNOLOGIES INC. Boxborough, Mass. (508) 264-8000 or (800) 632-4636	**MultiSync XE21** **MultiSync XP21**	$1,899 $2,099	21" 21"	19.8" 19.8"	Shadow mask Shadow mask	.28mm .28mm	1,152x870 1,280x1,024	75 Hz 75 Hz	Y Y	H/S H/S	3 years
NOKIA DISPLAY PRODUCTS INC. Sausalito, Calif. (415) 331-4244 or (800) 296-6542	**Multigraph 445X**	$2,275	21"	19.69"	Shadow mask	.25mm	1,280x1,024	75 Hz	Y	S	3 years
NSA-HITACHI LTD. Westwood, Mass. (617) 461-8300	**SuperScan MC20** **SuperScan MC21** **SuperScan MC21HR**	$1,649 $2,199 $2,349	20" 21" 21"	19" 20" 20"	Shadow mask Shadow mask Shadow mask	.28mm .22mm .22mm	1,152x870 1,152x870 1,152x870	86 Hz 90 Hz 104 Hz	Y Y Y	S S S	3 years
PANASONIC COMPUTER PERIPHERAL CO. Secaucus, N.J. (201) 348-7000 or (800) 742-8086	**PanaSync ProC-2192P**	$1,999	21"	19.7"	Shadow mask	.25mm	1,152x870	75 Hz	Y	None	3-year on-site
PHILIPS CONSUMER ELECTRONICS CO. Knoxville, Tenn. (423) 521-4316 or (800) 835-3506	**Magnavox CM5600** **Magnavox CM2137** **Magnavox CM21BA** **Phillips Brilliance 21A**	$1,699 $2,299 $2,899 $2,999	20" 21" 21" 21"	18.9" 19.68" 20.13" 20.13"	Shadow mask Shadow mask Shadow mask Shadow mask	.28mm .28mm .26mm .28mm	1,152x870 1,152x870 1,152x870 1,152x870	75 Hz 75 Hz 75 Hz 75 Hz	N Y Y N	None H S H/S	3-year parts, 1-year labor 3 years
RADIUS INC. Sunnyvale, Calif. (408) 541-6100 or (800) 572-3487	**PressView 21SR** **PrecisionView 21**	$3,999 $2,749	21" 21"	19.7" 19.7"	Aperture grille Aperture grille	.30mm .30mm	1,152x870 1,152x870	75 Hz 75 Hz	Y Y	H/S H/S	1 year
SAMPO TECHNOLOGY INC. Norcross, Ga. (770) 449-6220	**AlphaScan GLX**	$1,195	20"	19"	Shadow mask	.28mm	1,152x870	75 Hz	N	H	2 years
SAMSUNG ELECTRONICS AMERICA INC. Ridgefield Park, N.J. (201) 691-6200 or (800) 933-4110	**20GLS** **21GLS**	$1,299 $1,799	20" 21"	18.75" 19.75"	Shadow mask Shadow mask	.28mm .28mm	1,152x870 1,152x870	75 Hz 75 Hz	Y Y	H H/S	3 years
SMILE INTERNATIONAL Costa Mesa, Calif. (714) 546-0336 or (800) 876-4532	**CA2011** **CA2111**	$1,385 $1,825	20" 21"	19" 19.75"	Shadow mask Shadow mask	.28mm .28mm	1,152x870 1,152x870	75 Hz 75 Hz	Y Y	H H	3-year limited
SONY ELECTRONICS INC. San Jose, Calif. (408) 955-5107 or (800) 352-7669	**Multiscan 20SF II**	$2,299	20"	19.1"	Aperture grille	.30mm	1,280x1,024	75 Hz	Y	S	3 years
TATUNG COMPANY OF AMERICA INC. Long Beach, Calif. (310) 637-2105 or (800) 827-2850	**CM-20MKR**	$1,799	20"	18.4"	Shadow mask	.28mm	1,152x864	75 Hz	N	None	2 years
TECHMEDIA COMPUTER SYSTEMS CORP. Garden Grove, Calif. (714) 379-6677 or (800) 379-0077	**TCM-2050**	$1,399	20"	18.75"	Shadow mask	.28mm	1,280x1,024	75 Hz	N	H	3 years
VIEWSONIC CORP. Walnut, Calif. (909) 869-7976 or (800) 888-8583	**ViewSonic 20G** **ViewSonic GT800** **ViewSonic 21PS** **ViewSonic PT810**	$1,395 $1,899 $1,845 $2,195	20" 20" 21" 21"	18.4" 19.1" 19.7" 19.5"	Shadow mask Aperture grille Shadow mask Aperture grille	.28mm .30mm .25mm .30mm	1,280x1,024 1,280x1,024 1,280x1,024 1,280x1,024	75 Hz 75 Hz 75 Hz 75 Hz	N Y Y Y	H/S H/S H/S H/S	3 years

[1] Maximum resolution for Macintosh monitors. [2] Noninterlace refresh rate. S=Software. H=Hardware.

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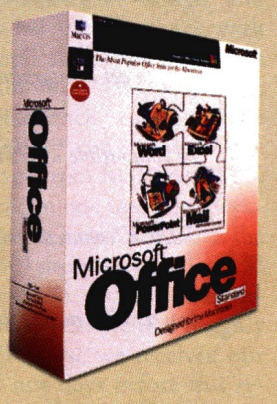

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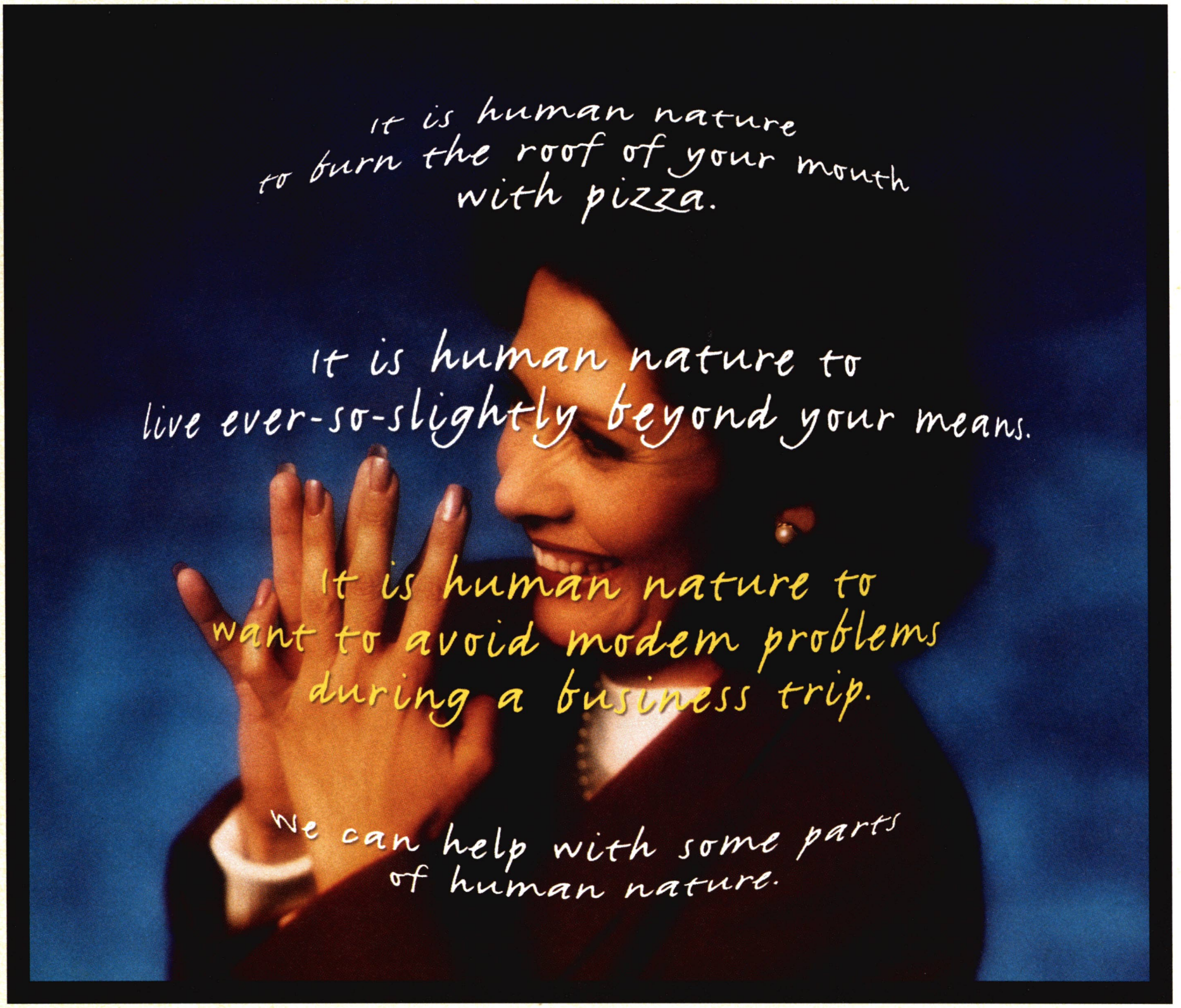
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SO FAST IT HERTZ

The new PowerTower from Power Computing Corp. breaks the 50-MHz limit on CPU bus speed.

Polaroid enters digital camera market with flash

ED CALDWELL

Polaroid is attempting to snap up a piece of the digital camera market with flash with the PDC-2000, which offers stunning images on par with more expensive digital SLRs.

By Bruce Fraser

The PDC-2000 produces high-quality images, but there are some problems to work around.

Thanks to some nifty proprietary technology, the PDC-2000 — Polaroid Corp.'s first digital camera — sets a new price point for high-quality digital images.

The quality of the images the $3,695 PDC-2000 delivers is simply remarkable, comparing favorably to cameras in the $8,000 to $10,000 range. But like all other digital cameras we've seen, the PDC-2000 involves some compromises, too. Most digital cameras we've looked at tend to compromise image quality first, so we don't want to put too much emphasis on the Polaroid's shortcomings (many of them can be worked around), but neither can we ignore them.

The PDC-2000 is a range finder-type autofocus, autoexposure point-and-shoot, with a fixed 11mm f2.8 glass lens (equivalent to 38mm focal length on a 35mm camera). A 60mm-equivalent lens is available as an optional accessory. The image is captured on a proprietary megapixel CCD and can be extracted from the camera as either a High Resolution 800-by-600-pixel 24-bit image, or as a Super-high Resolution 1,600-by-1,200-pixel 24-bit image.

Storage to spare

The camera comes in three configurations that differ only in storage: The PDC-2000/T, a direct-connect model with no internal storage, lists for $2,995; the PDC-2000/40, the model we reviewed, has an internal hard drive that stores 40 images; and the top of the line, the PDC-2000/60, boasts solid-state memory storage for 60 images and lists for $4,995. Neither of the built-in storage options is removable: The only way to retrieve images from the camera is to connect it to a host computer's SCSI interface.

Not a nice view

Our first experience wasn't positive — we couldn't figure out how to turn the camera on without consulting the manual. The on-off switch is the only unmarked control. Once identified, it's easy enough to use, but several other experienced photographers to whom we showed the camera had the same difficulty. The camera is basically brick-shaped — 7.9 by 6.3 by 2.2 inches — but it's quite easy to hold, and the controls are sensibly placed.

When we looked through the viewfinder, we almost gave up on the camera completely. It is undoubtedly the PDC-2000's worst feature: It's dim; it's fuzzy; it lacks any diopter adjustment for eyeglass wearers; it displays heavy chromatic aberration; and unless you get your eye in precisely the right position, it blacks out completely. Since the camera is a range finder rather than an SLR, it's puzzling that the viewfinder should be so bad — it's a simple optical tube, quite divorced from the actual camera optics. It bears so much resemblance to the equally awful viewfinder of Polaroid's SX-70 instant-film camera that we have to wonder if Polaroid is using a stock of old parts. In any case, if Polaroid changes only one thing about the camera, we beg it to provide a better viewfinder.

See Polaroid, next page

score card

PDC-2000/40

Polaroid Corp.
List price: $3,695*
Overall value ◆◆◆◆

Polaroid's PDC-2000/40 represents a breakthrough in image quality for its price, delivering clean images that require only minor adjustments for contrast and color balance at either 800 by 600 or 1,600 by 1,200 pixels. Polaroid has incorporated some revolutionary imaging science in this camera with great success in terms of image quality. The main compromises are in the inflexible storage options and the absolutely terrible viewfinder, which mars an otherwise excellent piece of work. If you can work around the device's shortcomings, you'll find it delivers images that rival cameras costing two or three times as much.

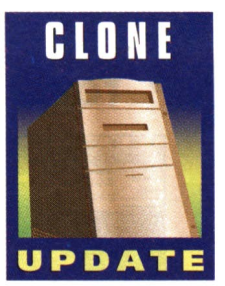
Performance ◆◆◆◆◆
Features ◆◆◆
Configuration ◆◆◆◆
Compatibility ◆◆◆
Documentation/support ◆◆◆

**PDC-2000/T (no internal storage), $2,995; PDC-2000/60 (stores 60 images), $4,995.*

Key ◆◆◆◆◆ *Excellent* ◆◆◆◆ *Very good* ◆◆◆ *Good* ◆◆ *Fair* ◆ *Unsatisfactory*

PowerTowers give the most bang for the buck

From Page 1



Overall value:

PowerTower 180 ◆◆◆◆
PowerTower 166 ◆◆◆◆
PowerCenter 150 ◆◆◆
PowerCenter 132 ◆◆◆
PowerCenter 120 ◆◆◆

speed CD-ROM drive. Thankfully, Power Computing has followed Apple's example by including Level 2 cache in all its new systems.

Benchmark tests on prerelease versions of all five new models and hands-on testing of the PowerCenter 120 and, briefly, the PowerTower 180, reveal no major surprises but some interesting details.

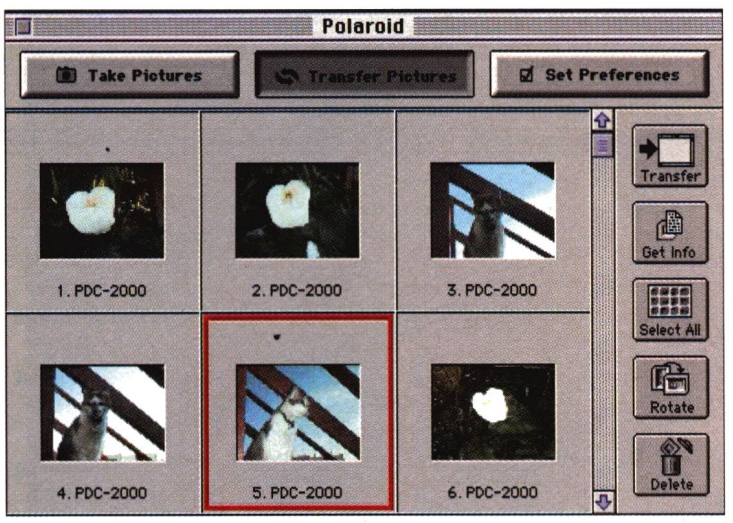
Reclaiming the lead

As expected, both the PowerTower 180 and 166 outperform what's now the top of Apple's line, the new 150-MHz versions of the Power Mac 8500 and 9500. (We ran most of our PowerTower tests with Connectix Corp.'s Speed Doubler loaded because the utility comes pre-installed on the systems.)

As measured by MacBench 3.0, however, the PowerTowers' margin of superiority is slightly smaller than processor clock speeds would suggest; likewise, MacBench shows the PowerCenter systems falling a step short of Apple models with the same CPU and cache.

Power Computing officials said their tests show that this phenomenon is mainly an artifact of MacBench's design and doesn't reflect what users will see with most real-life applications. But our tests with Adobe Photoshop 3.0.5 tended to confirm the MacBench finding: The Power Mac 7600/120 converted an 80-Mbyte TIFF image from RGB to CMYK color, for example, in one minute, 58 seconds, while a PowerCenter 120, with the same 120-MHz 604 processor, needed 2:53 to finish the same job. Other processor-intensive Photoshop tests yielded roughly similar results. (Because we received our evaluation units just days before this review was due, we were not able to explore this issue with other applications.)

See PowerTower, Page 36



You can transfer images from the Polaroid PDC-2000 singly or in groups, either directly to a dedicated volume, or to an application such as Adobe Photoshop. The PDC-2000 Direct software also lets you delete images to free up storage space in the camera.

Polaroid

From previous page

The camera functions as a fairly basic autofocus, autoexposure point-and-shoot. You can turn autofocus off, which sets the focus to infinity for situations where the autofocus might be fooled, such as shooting through a window. There are no manual focus adjustments, but given the range finder design, this makes sense: You have no way of previewing the focus anyway. The built-in flash has three settings — on, off and auto. We prefer the latter for most situations, where it can provide illumination ranging from full flash to a slight fill flash.

A color balance button lets you compensate for incandescent or fluorescent lighting, but with the flash on auto setting, the default daylight color balance setting should be used. The alternatives are only for situations where you choose to shoot indoors without flash. The only other manual control for picture taking is a backlight compensation setting. You simply have to learn from experience when to use this control — the camera doesn't have any way of telling you.

When we started shooting with the camera, we noticed a slight lag between the instant when we pressed the shutter and the moment at which the image was taken. The camera takes about seven seconds to store an image and come back to readiness without flash, or about 12 seconds with flash. The lack of a good preview and the absence of any feedback about exposure left us feeling uncertain about just what we'd captured, but that's par for the course with most digital cameras and certainly for ones in this price range.

Power for the camera comes from four rechargeable AA nickel-cadmium batteries. We were glad to find that the batteries hold sufficient charge to power the camera long enough to fill the storage medium, even when using flash continuously. Polaroid claims the batteries will allow you to take at least 150 images without recharging, but our on-board storage was limited to 40 images, and we usually used the power adapter/trickle charger when we connected the camera to the Mac for downloading the images, so we never came close to testing this limit.

To view the images, you must connect the camera to the Mac's SCSI bus using the supplied cable, which goes from a DB-25 to a very tiny proprietary connector on the side of the camera. A 25-to-50-pin adapter is also included, but the camera, which is internally terminated, must be the last device on the SCSI chain. A rotary switch lets you set the SCSI ID.

The camera ships with an Adobe Photoshop plug-in and a stand-alone application, PDC-2000 Direct, that replicates the function and interface of the plug-in. PDC Direct lets you transfer images directly to a specified hard disk, while the plug-in adds the option of simply opening the image in Photoshop. Both also let you operate the camera remotely, in which case the images are saved directly to the host computer, bypassing the camera's internal storage.

> When looking at images from the PDC-2000 it is clear that Polaroid's image science has paid off in a big way.

Magic hour

When we looked at the images, it became clear that Polaroid's image science has paid off in a big way. At 800 by 600 pixels they were exceptionally clean, and even at 1,600 by 1,200 pixels images showed very few artifacts. Part of this is because of Polaroid's avoidance of JPEG compression, but most of it because of to the way Polaroid has approached the whole digital camera problem. The PDC-2000 differs from its competitors in two significant ways.

First, the CCD itself contains 1,600-by-600-pixel elements, each element capturing a rectangular pixel twice as tall as it is broad, rather than the square pixels used in most sensors. (Some low-end cameras use camcorder sensors, which also capture rectangular pixels — this is something quite different.) Second, the color filters used by Polaroid have a much wider band-pass characteristic than do those of its competitors. This means that the blue and red channels contain more luminance information than is usual, so the Polaroid camera doesn't need to double up the green sensors the way most digital cameras do. The trade-off is that you lose a little saturation. The camera also seems to boast a considerably wider dynamic range than its competitors, holding detail in the highlights particularly well, even with full-flash close-ups.

The real magic is in the software that turns the raw capture, made up of rectangular monochrome pixels, into square full-color ones. At the lower 800 by 600 resolution, the PDC-2000 uses less interpolation than comparable cameras to produce the final image. At the higher 1,600 by 1,200 resolution, a good deal of interpolation is being done, but the results don't show it. The captures are very clean; the only artifacts we ran into were slight amounts of aliasing along diagonal edges.

The images usually needed slight adjustments for contrast and for color balance, but these were easily accomplished. The color balance was usually a matter of increasing the blue, and occasionally, the red slightly. We didn't run into any problems with the color crossovers that have plagued some of the other digital cameras we've used.

There are certainly things we'd like to see changed in the PDC-2000. The appalling viewfinder really mars the whole experience of using the camera. We'd also like the software to let us save the raw image capture, a file of about 1 Mbyte. The current software forces us to choose the resolution and save the processed file, and even the 800-by-600-pixel image is larger than the raw capture. The 1,600-by-1,200-pixel image is more than five times the size of the raw capture, so saving high-resolution images takes up a great deal more space than would archiving the raw captures.

Conclusions

Despite its shortcomings, the PDC-2000 is a remarkable piece of work. The cycle time between shots is too long, and the range of available lenses is too small to make the camera suitable for photojournalism. However, the image quality makes it quite competitive with more expensive digital SLRs for a wide range of applications. We look forward to further improvements of a marvelous feat of technology.

Polaroid Corp. of Cambridge, Mass., can be reached at (617) 386-2000 or (800) 816-2611, Ext. 868; fax (617) 386-3584; http://www.polaroid.com. □

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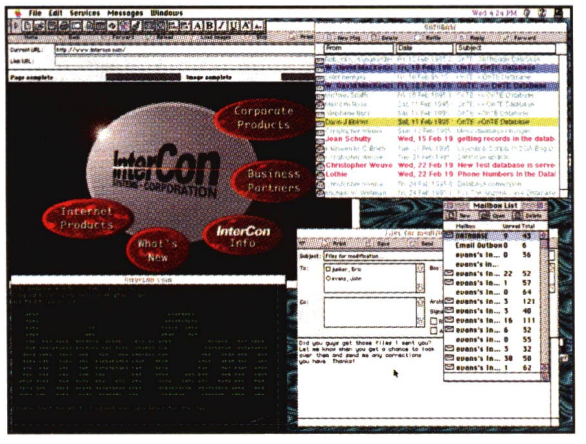

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PowerTower

From Page 33

On the other hand, if what you require is maximum performance, no current Apple system can touch the PowerTowers: Applying an Unsharp Mask to our test image took 2:58 on a 9500/150, but only 2:25 on the PowerTower 180.

The revenge of the 7200

Behind the differences in performance lie some complicated technical issues. All the new Power Computing systems are derived from the logic board Apple developed for the Power Mac 7200, which has a 64-bit data path and therefore does not support memory interleaving; by contrast, the high-end Apple systems have 128-bit data paths and use memory interleaving to squeeze out some extra performance.

On the other hand, Power Computing had a good reason to adopt the 7200 logic board, despite this limitation: It's the only current Apple logic board capable of supporting today's PowerPC 604 processors running at clock speeds above 150 MHz. The limiting factor is the internal channel known as the "CPU bus" or "memory bus," which connects the processor, Level 2 cache and main memory; the logic boards from Apple's higher-end PCI systems have a speed limit on this bus of 50 MHz.

Current 604 chips, however, have a maximum "clock divider" — the ratio of processor frequency to CPU-bus frequency — of 3-to-1. In other words, a 604 running at 180 MHz requires a bus running at no less than 60 MHz; a 166-MHz version of the chip needs a bus speed of at least 55.33 MHz. The 7200 board, with additional engineering on Power Computing's part plus careful selection of cache memory and other components, supports these speeds; the higher-end Apple boards do not. (Apple apparently won't offer 166- or 180-MHz processors until the release of the PowerPC 604e, which incorporates a clock-divider option of 4-to-1.)

The pros and cons

Faster processors and CPU buses aren't the only advantage of the PowerTowers relative to the Power Mac 8500 and 9500: The former come in an enclosure that makes adding cards and especially RAM much easier than do Apple's perverse tower designs.

With two free front-accessible 5.25-inch bays (not counting the one used for the CD-ROM drive), the PowerTowers also have more room for internal storage devices. In addition, all the Power Computing systems come with a keyboard and a now-familiar bundle of first-rate software titles, including ClarisWorks; Nisus Writer; Now Software Inc.'s Now Up-to-Date, Now Contact and Now Utilities; and several CD-ROM titles. Power is also offering configurations of the machines that come with Microsoft Office installed, along with extra RAM. The PowerCenter 120 Office bundle is $2,595 and includes 24 Mbytes of RAM; the PowerTower 180 Office, with 32 Mbytes of RAM, is $4,795.

On the other side of the ledger, Apple's Power Mac 9500 has twice as many PCI slots — six — as the PowerTowers, and the Power Mac 7600, 8500 and 9500 all have dual SCSI buses and internal Fast SCSI support — features offered by neither PowerCenter nor PowerTower models. Nor do any of the Power Computing systems match the digital video capabilities of the Power Mac 7600 or 8500.

Finally, a usability issue that may be important to users working at home or in quiet studios: The Power Computing systems are far noisier than Apple's. (Power Computing said shipping systems will have quieter fans than the units we tested but acknowledged they would not be as quiet as the Apple systems.)

Conclusions

Power Computing in recent months has not always kept up with heavy street discounting of Apple systems, but with its new models it has reasserted price/performance leadership. Depending on configuration, PowerCenter and PowerTower systems cost hundreds of dollars less than the announced prices for the most comparable Apple systems.

Such savings would evaporate quickly if customers in need of sales and technical support can't get prompt and effective assistance. Fortunately, Power Computing appears to be making steady progress in recovering from the much-publicized problems that beset it earlier this year.

Obviously, sticking with Apple remains the more conservative route. But if you're seeking maximum bang for the buck, the PowerCenter and especially the PowerTowers deserve careful consideration.

Power Computing Corp. of Round Rock, Texas, is at (512) 388-6798; fax (512) 388-6798, fax-back (800) 788-3783; info@powercc.com; http://www.powercc.com. □

MACWEEK MACBENCH 3.0 LABS

Power Computing's new models

The new PowerTowers, based on 166- and 180-MHz PowerPC 604 processors, are the fastest single-processor Mac OS-compatible systems yet. The midrange PowerCenter models also deliver impressive performance, although they fall short of Apple Power Macs with equivalent processors.

Power Mac-native CPU speed

Processor Test	6100/60*	Higher score is better
PowerTower 180		36.43
PowerTower 166		33.47
PowerCenter 150		27.25
PowerCenter 132		24.17
PowerCenter 120		21.84
Power Mac 9500/150		31.86
Power Mac 7600/120		24.50

Graphics speed typical of general-purpose software

Graphics Mix	6100/60*	Higher score is better
PowerTower 180		43.50
PowerTower 166		35.44
PowerCenter 150		24.83
PowerCenter 132		22.10
PowerCenter 120		20.03
Power Mac 9500/150		48.53
Power Mac 7600/120		24.68

Processor speed in decimal math

Floating Point	6100/60*	Higher score is better
PowerTower 180		36.50
PowerTower 166		33.66
PowerCenter 150		29.65
PowerCenter 132		26.07
PowerCenter 120		23.66
Power Mac 9500/150		29.77
Power Mac 7600/120		24.19

Test configurations

PowerTower 180, PowerTower 166 32 Mbytes RAM, 2-Gbyte drive, 512-Kbyte Level 2 cache, 2 Mbytes VRAM. Tested with Connectix Corp.'s Speed Doubler, which comes bundled with them.

PowerCenter 150, PowerCenter 132, PowerCenter 120 16 Mbytes RAM, 850-Mbyte drive, 256-Kbyte Level 2 cache, 1 Mbyte VRAM

Power Mac 9500/150 16 Mbytes RAM, 2-Gbyte drive, 512-Kbyte Level 2 cache, 4 Mbytes VRAM on ATI XClaim GA display card

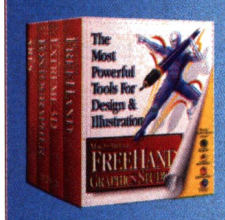
Power Mac 7600/120 16 Mbytes RAM, 2-Gbyte drive, 256-Kbyte Level 2 cache, 2 Mbytes VRAM

All tests run under System 7.5.3 with only standard extensions loaded, virtual memory off and Modern Memory Manager on. Displays were set to eight-bit color at a resolution of 640 by 480 pixels.

*MacBench's score compares speed to a Power Mac 6100/60, which receives a 10.

MacWEEK More Info ONLINE

For additional benchmarks rating the Power Computing machines' performance for publishing and disk use, see MacWEEK's Web site at http://www.zdnet.com/macweek/reviews.html/.



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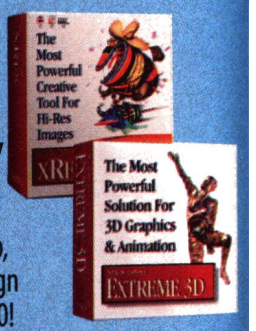

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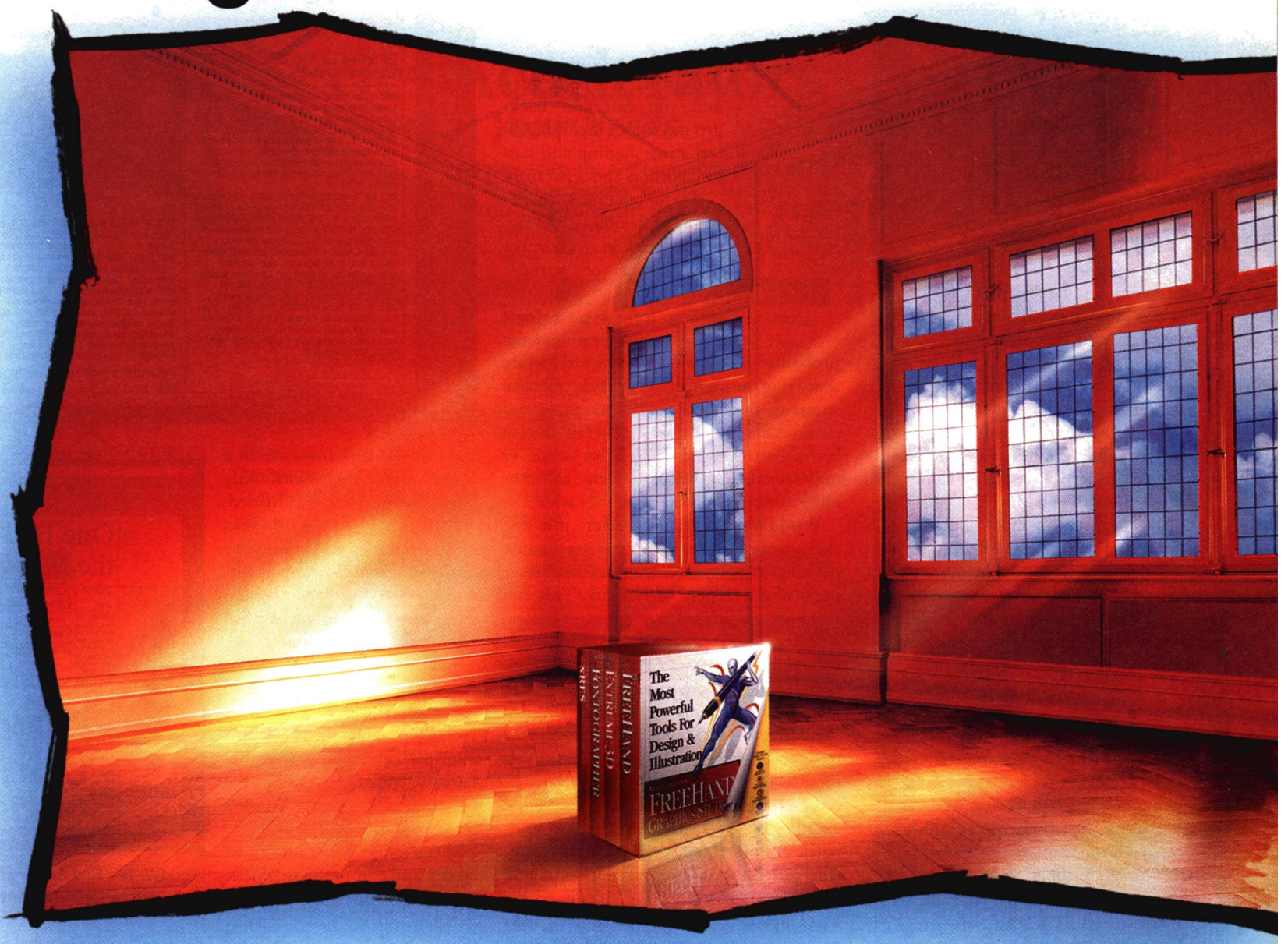

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WorldWrite 3.0 shows potential despite flaws

By Henry Norr

App counters rough edges, dangerous bugs with impressive speed, elegance and power.

When WorldSoft Corp. first previewed the U.S. version of WorldWrite 3.0 more than a year ago, it seemed too good to be true: a word processor with a clear, clean interface that would fit on an 800-Kbyte floppy and run — fast — in 1 Mbyte of memory, yet deliver strong page-layout and table capabilities, built-in graphics, and full support for WorldScript and other advanced Apple technologies. And it was all supposed to ship in a few months.

Indeed, the original vision did prove impossible to achieve: The product didn't ship for more than a year, a full installation now occupies more than 6 Mbytes of disk space, and the suggested memory allocation is 5 Mbytes on a Power Mac (3 Mbytes on 680x0-based Macs or with virtual memory turned on). In addition, Version 3 is marred by some rough edges and dangerous bugs. But the $99 program does offer an impressive combination of speed, elegance and power.

Features

WorldWrite's single tool bar makes it easy to set most formatting parameters, including relatively sophisticated controls such as tracking and scaling. You can also create style sheets for both paragraph- and character-level formatting; a single style sheet can even apply different attributes to different languages within a single text block.

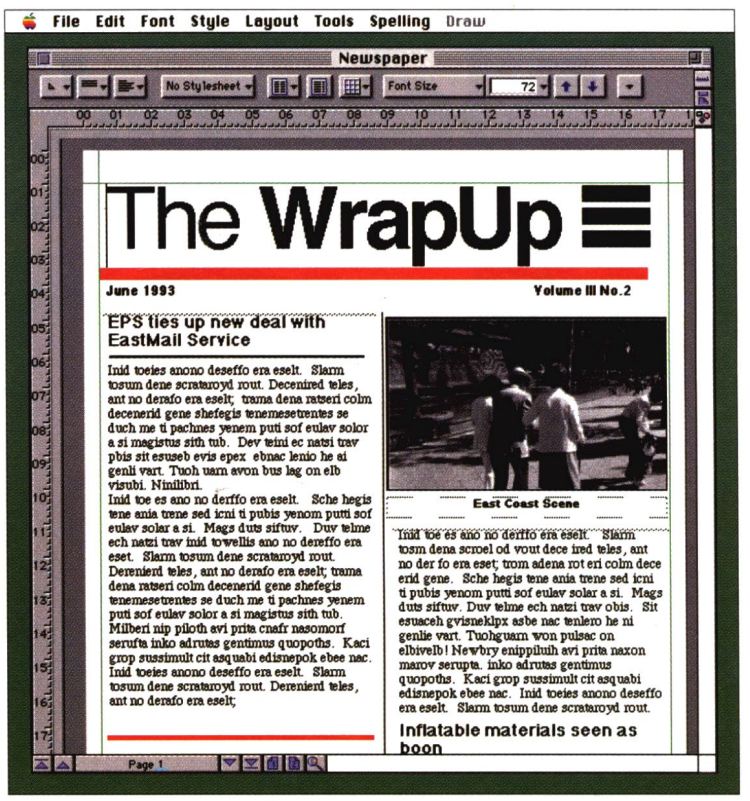
The ruler also contains pop-up controls for creating tables and setting up multicolumn layouts. We found the tables easy to use: Rows automatically expand as you enter text, and you can add background colors, including alternating shading and custom borders and separators.

As for columns, there's plenty of flexibility — a layout can contain any number of columns of variable widths, with multiple-column formats on a single page — but we found the procedures in some ways awkward (before specifying the number of columns, you have to give the New Column Format command both at the beginning and end of the area to be formatted). And for reasons we never understood, text we pasted into columns often came out only one character wide.

WorldWrite's graphics layer, just one click away, provides basic drawing (but not painting) tools, layer controls and support for importing a variety of formats. Text can wrap around irregular graphics, at a user-specified offset, or graphics can be displayed behind the text as a watermark. Printing options include custom page sizes, registration and crop marks, and even color separation. While the program relies on Apple's XTND technology for importing and exporting most formats, an option to save in QuarkXPress format is built into the application.

Other features include footnotes, endnotes, multilevel indexing and table of contents generation; a Copy Append command for adding text to material already on the Mac Clipboard; markers for easy navigation within long documents; password protection of documents; support for System 7.5 drag-and-drop; mail merge with conditional programming options; speech synthesis (via Apple's PlainTalk technology) and recording of embedded comments; and a Find & Change command that allows searching by format attributes. Although most options are readily accessible, you can add those you use most frequently to a pop-up on the ruler; you can also customize keyboard equivalents.

A special version of Evan Gross' Thunder7, the best spelling checker and thesaurus available on the Mac, is built into WorldWrite 3. Unfortunately, it lacks the interactive checking and keystroke recording features of the stand-alone version (formerly offered by Baseline Publishing Inc. and soon to be re-released by Casady & Greene Inc. under the name Spell Catcher), and we encountered frequent crashes when we used its statistics function on a Power Mac, even with only basic Apple extensions loaded.


File Edit Font Style Layout Tools Spelling Draw
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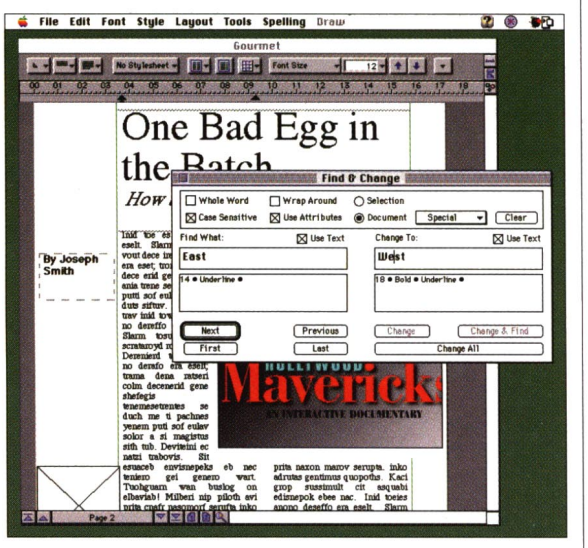
EPS ties up new deal with EastMail Service
East Coast Scene
Inflatable materials seen as boon

WorldSoft's WorldWrite 3 is a good choice for those who want an inexpensive word processor with built-in desktop publishing features. The application includes unlimited columns, a graphics layer and built-in color-separation capabilities.

According to WorldSoft, WorldWrite is compatible with all Apple foreign-language kits and supports vertical as well as right-to-left text input. We did not test these features.

In an age when most publishers are cutting their manuals to the bone, WorldSoft deserves a special pat on the back for WorldWrite's manual. A paperback book of more than 300 pages, it harks back to Apple's best manuals, not only in layout and typography, but also in its clarity and comprehensiveness. (Our only request here: a more detailed index. "Color separation," for example, is not listed under either of those words; we couldn't find it until we looked under "printing.")



WorldWrite's Find & Change dialog box lets you modify a document by formatting attributes as well as by content.

There's also a bare-bones Apple Guide and balloon help; on our system, however, an annoying flicker made balloon help even more annoying than usual.

Technical support requires a toll call to Utah, and when we called, we caught the company in transition to a new phone system. But the representative we spoke with was friendly and helpful. The company also offers support via e-mail and its Web page.

Shaky writing

WorldWrite is missing refinements we appreciate in some of its competitors: Trailing spaces are not automatically eliminated, for example, when you delete or move a word, and the only way we could find to produce typographer's quotation marks without using awkward keyboard combinations was to use Thunder7's Smarten Quotes.

Our biggest concern, however, is stability: In addition to the problem with the Statistics command, we experienced random crashes so frequently, especially with the native PowerPC version of the program, that we soon learned to save at the end of every sentence. Only the application itself crashed, never the whole Mac, and we could relaunch the program and resume work immediately when we didn't want to bother restarting. Still, such unreliability is clearly unacceptable. WorldSoft said it is working on a maintenance release, Version 3.0.1, which it expects to ship in a few months.

Conclusions

WorldWrite boasts an impressive collection of features, especially considering the product's low price. But WorldSoft will have to work hard to carve out a niche for the program in a field that already includes two feature-rich industry standards: Microsoft Word and WordPerfect; Nisus Writer, which also offers strong foreign-language support and powerful macro and search capabilities; and the ubiquitous and versatile ClarisWorks. Once it has matured a bit, though, we think WorldWrite could give the established leaders a run for their money.

WorldSoft Corp. of Saratoga, Calif., can be reached at (800) 225-9299; fax (801) 350-9491; http://www.worldsoft.com. □

score card

WorldWrite 3.0

WorldSoft Corp.
List price: $99*
Overall value ◆◆◆

The latest entrant into the Macintosh word processing race is notable for an elegant interface, numerous format options and publishing features, and strong foreign-language support. The built-in spelling checker, a special version of Thunder7, is also a major plus. The current release, however, lacks maturity: Some features need refinement, and, most of all, the company needs to eliminate the bugs that caused frequent crashes in our testing.

Performance ◆◆
Features ◆◆◆◆
Ease of use ◆◆◆◆
Documentation/support ◆◆◆◆

**Through June 30; $149 thereafter. Bundle with one of Apple's WorldScript-based language kits (Hebrew, Arabic or Cyrillic), $189.*

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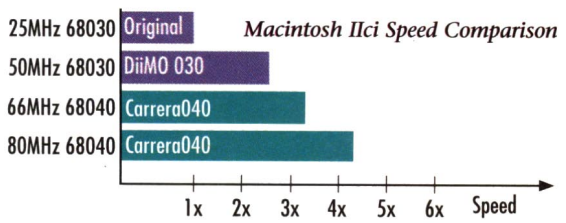
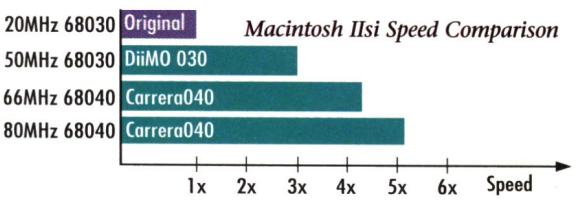
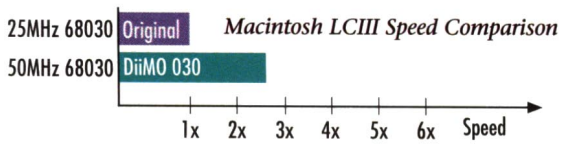


Macintosh IIci Speed Comparison



Macintosh IIsi Speed Comparison



Macintosh LCIII Speed Comparison

Macintosh IIci	w/o FPU	Order #	w/FPU	Order #
DiiMO 030 50MHz 68030	$199.99	# 79095	$249.99	# 79096
Carrera040 66/33MHz 68040	299.99	# 73306	399.99	# 73307
Carrera040 80/40MHz 68040	499.99	# 73308	599.99	# 73309
CarreraTurbo 128KB Cache Card*	99.99	# 73322		

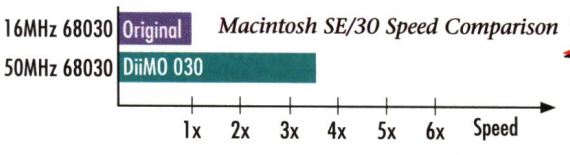
Macintosh IIsi	w/o FPU	Order #	w/FPU	Order #
DiiMO 030 50MHz 68030	$199.99	# 79097	$249.99	# 79098
Carrera040 66/33MHz 68040	299.99	# 73310	399.99	# 73311
Carrera040 80/40MHz 68040	499.99	# 73312	599.99	# 73313
CarreraTurbo 128KB Cache Card*	99.99	# 73322		

Macintosh LCIII	w/o FPU	Order #	w/FPU	Order #
DiiMO 030 50MHz 68030	$199.99	# 79087	$249.99	# 79088

Macintosh SE/30	w/o FPU	Order #	w/FPU	Order #
DiiMO 030 50MHz 68030	$249.99	# 79089	$299.99	# 79090

Macintosh II	w/o FPU	Order #	w/FPU	Order #
Marathon 32MHz 68030	$99.99	# 79091	$149.99	# 79092
DiiMO 030 50MHz 68030	249.99	# 79093	299.99	# 79094

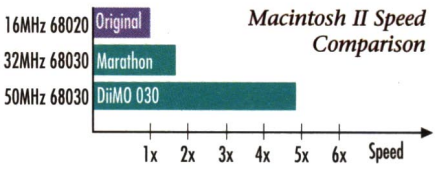
**Also available for the Macintosh® IIcx & IIx*



Macintosh SE/30 Speed Comparison

68030 from $99

The MicroMac Marathon accelerator offers economical processing power for your Macintosh II. With a 32MHz 68030 processor and optional 32MHz FPU.



Macintosh II Speed Comparison

68040/030 LC and LCII Accelerators...Break the 10MB Barrier!

68030 from $138

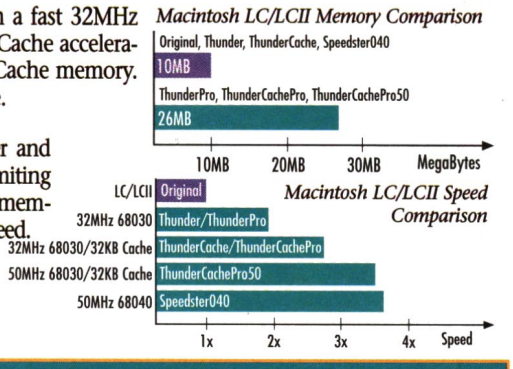
MicroMac's Thunder accelerator boost the performance of your LC or LCII with a fast 32MHz 68030 CPU. This entry level model comes with an FPU. The MicroMac Thunder Cache accelerator combines the pure speed of the 32MHz 68030 CPU with an ultra-fast 32KB Cache memory. The optional 32MHz FPU makes working with spreadsheets and graphics a breeze.

68030 from $199

The ThunderPro and ThunderCachePro accelerators are the same as the Thunder and ThunderCache accelerators with the addition of four SIMM slots to break the limiting 10MB RAM barrier associated with the LC and LCII. Allowing you to upgrade your memory up to 26MB. And the ThunderCachePro is available at 50MHz for even more speed.

68040 from $299

The MicroMac Speedster 040 accelerator offers impressive Quadra performance for your LC or LCII with a 50/25MHz 68040 CPU with optional FPU.



Macintosh LC/LCII Memory Comparison

Macintosh LC/LCII Speed Comparison

Macintosh LC	w/o FPU	Order #	w/FPU	Order #
Thunder 32MHz 68030			$138.99	# 69219
ThunderCache 32MHz 68030 w/32KB Cache	$199.99	# 69220	249.99	# 69221
ThunderPro 32MHz 68030 w/4 SIMMs Scks	199.99	# 69222	249.99	# 69223
ThunderCachePro 32MHz 68030 w/32KB Cache & 4 SIMMs Scks	249.99	# 69224	299.99	# 69225
ThunderCachePro 50MHz 68030 w/32KB Cache & 4 SIMMs Scks	299.99	# 69226	349.99	# 69227
Speedster040 50/25MHz 68040	299.99	# 79079	399.99	# 79080

Macintosh LCII (Performa 4xx)	w/o FPU	Order #	w/FPU	Order #
Thunder 32MHz 68030			$138.99	# 69228
ThunderCache 32MHz 68030 w/32KB Cache	$199.99	# 69229	249.99	# 69230
ThunderPro 32MHz 68030 w/4 SIMMs Scks	199.99	# 69231	249.99	# 69232
ThunderCachePro 32MHz 68030 w/32KB Cache & 4 SIMMs Scks	249.99	# 69233	299.99	# 69234
ThunderCachePro 50MHz 68030 w/32KB Cache & 4 SIMMs Scks	299.99	# 69235	349.99	# 69236
Speedster040 50/25MHz 68040	299.99	# 79083	399.99	# 79084

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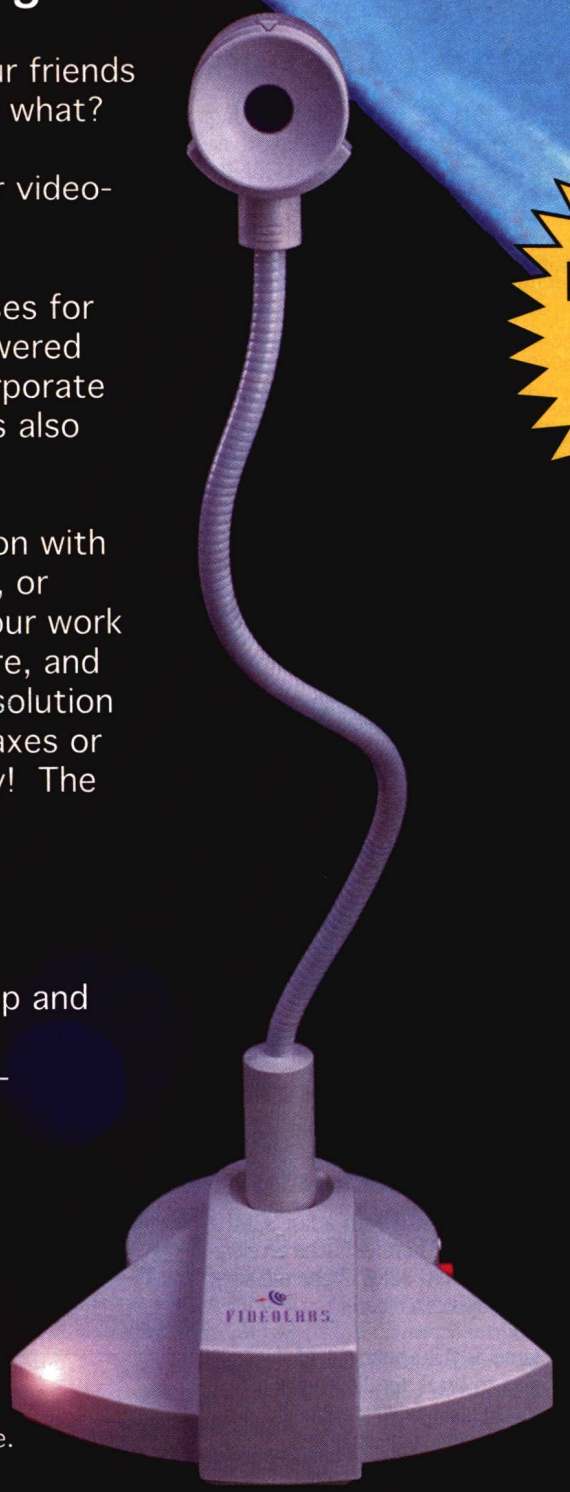

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LAN MANAGEMENT

Mac admins cobble together network-management tools

By Michael Miley

Desktop management tools are a loose grab bag of troubleshooting applications that have been the lifesavers of many network managers. Until fully integrated management software is available for the Macintosh, however, the recommended strategy for meeting network managers' needs is to bring together the best available tools, according to Forrester Research Inc. of Cambridge, Mass. In fact, some users feel that it's the only way to go.

Jeff Johnson, Macintosh services technologist for Synopsys Inc. of Mountain View, Calif., uses netOctopus from DataWatch Corp. of Wilmington, Mass.; KeyServer from Sassafras Software Inc. of Hanover, N.H.; Timbuktu from Farallon Computing Inc. of Alameda, Calif.; and Retrospect Remote from Dantz Development Corp. of Orinda, Calif., as part of his arsenal when administering a network of 83 zones, including 700 Macs (1,000 worldwide) among Intel-standard PCs and Unix workstations.

"You really want the best-of-breed product for the task at hand, not a bulky integrated package."

— Dorian Cougias, Network Frontiers Inc.

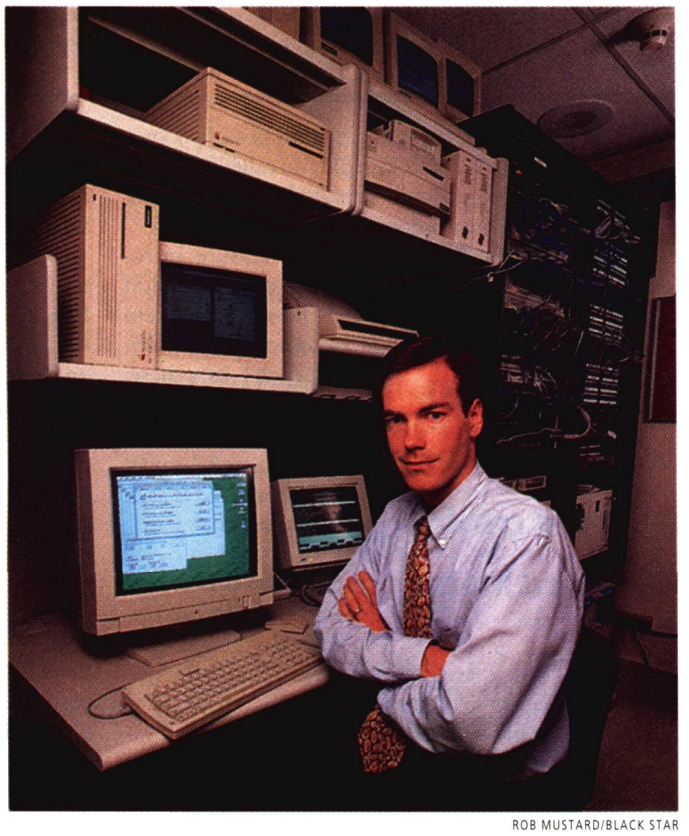
Rolling scripts

Johnson writes scripts in AppleScript and MacPerl to dump the information that netOctopus collects into Claris Corp.'s FileMaker or Microsoft Excel for asset analysis and reports. He sees scripting and object-oriented software development as the future for roll-your-own management, where an all-in-one integrated solution isn't necessary.

"netOctopus is really well optimized for debugging problems," Johnson said. "Once you have the workstation agents installed, you can do scans to get profiles on all system settings, to see whether linking is active; to adjust parameter RAM; or to see what fonts, control panels, extensions and the like are on users' Macs. Also, using netOctopus to do inventories and distribute software has saved me weeks of manual labor."

Dorian Cougias, senior consultant and founding partner of Network Frontiers Inc., a network training and consulting firm based in San Francisco, said: "The products are there if you know where to look. You really want the best-of-breed product for the task at hand, not a big bulky integrated package. Network managers just need to be creative and know how to use them."

Clay Romeiser, technology coordinator for the Los Angeles office of Boston-based The Boston Consulting Group, said, "Picking the best tool for the job is always preferable to an integrated package that tries to do everything but isn't very deep."



ROB MUSTARD/BLACK STAR

Clay Romeiser, technology coordinator for The Boston Consulting Group, says it's better to pick a good tool for a specific job rather than wrestle with an integrated package that tries to do everything.

While most system administrators are left to create management tool kits on their own, the Mac networks they administer are often part of much larger, mixed-platform LANs that include remote users. So network administrators must make sure that not only all the devices on their networks are operating properly and network performance is what it should be, but that server and user desktops are kept in working order, sometimes over thousands of computers. Also, because distributed computing is inherently more complex to manage than centralized systems, network management expenses have skyrocketed.

Creating the update model

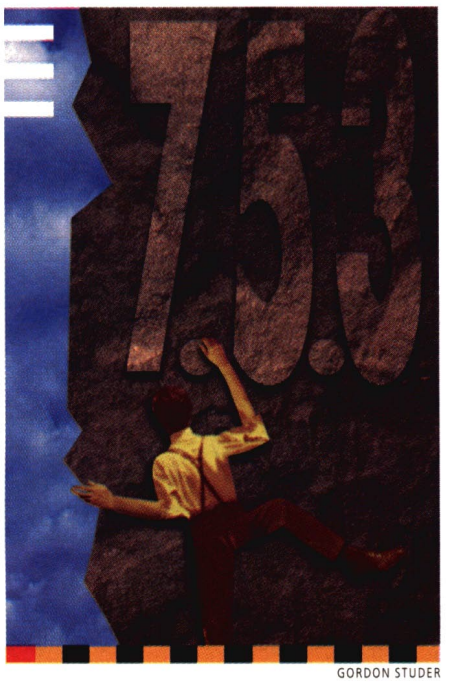
Rick Villars, director of network software for International Data Corp. of Framingham, Mass., uses a model approach for the individual desktop.

"Having a model for the user — one for their desktop and another for their laptop — lets a network manager configure an ideal system for the user, no matter where they [are]," Villars said. "If they're on the road and log in remotely, their laptop is tested against the model. If their software is out-of-date, they get the updates downloaded to their computer in the background."

One such product that uses a model approach is FileWave from Wave Research Inc. of Berkeley, Calif. It is a centrally administered software distribution and update product that keeps users' software current over LANs, WANs or remote connections. It does this via an agent installed on the user's machine that checks the configuration against the FileWave server and updates the user's machine from the FileWave Repository if that machine is out of sync.

"All our users are highly mobile, which makes managing their software updates more difficult than if they were local," said The Boston Consulting Group's Romeiser, who is re-

See Solutions, next page



GORDON STUDER

MACINTOUCH

RIC FORD

System 7.5.3 conflicts run from high to low

The inevitable compatibility conflicts are gradually shaking out of System 7.5.3. Some of them are typical software glitches with peripherals, while others are deeply arcane matters involving the lowest levels of the operating system and hardware. The following reports show the kinds of problems that can occur, but please note that I have not personally verified every report with the relevant vendor.

Apple's Tech Info Library reports that System 7.5.3 cannot display screen images correctly with the Radius SoftPivot 3.2.1 control panel installed. One reader paid Portrait Displays Inc. for a $100 package of hardware and software to solve the problem. The Tech Info Library also notes issues with older SuperMac NuBus video cards and System 7.5.3, including a problem starting up in 32-bit mode.

A reader was unable to start up an E-Machines Futura video card in millions of colors after the update, and another could not use a SuperMac Technology Inc. Spectrum PDQ 1.27 video card with System 7.5.3 until he took out some standard Apple extensions and installed an old SuperVideo 2.7.5 control panel.

Apple Telecom software had a fax soft-

See MacInTouch, next page

SOLUTIONS

From previous page

sponsible for keeping about 40 PowerBook Duos and 25 desktop Macs in good working condition. His network management tools include Retrospect Remote; Timbuktu; Norton DiskLock from Symantec Corp. of Cupertino, Calif.; and FileWave to update the users' software.

"Mobile users can't just walk into [my] office to get updates, and they may be in the office only once every couple of weeks," Romeiser said. "FileWave lets me manage them easily. When they dial in, their Duos are compared against the file sets, and if they're out of sync, they get the updates in the background automatically."

However, problems occur with certain applications — such as those from Microsoft Corp. — where the installation process writes files to the System folder, or when there's not enough space on a user's hard drive to complete an installation. Version 2.5 of FileWave can now tell you when that's the case, either by notifying you after it has sent the catalog file or proactively, if you use the Inspector to check the drive beforehand.

Another network product with a client-server paradigm is KeyServer, a favorite of Mac network managers for software license compliance across Mac and Windows clients. KeyServer helps sites control escalating software costs that come from overbuying on user licenses to ensure compliance. KeyServer allows administrators to "key" the software they install in their offices, whether it's launched from file servers, stand-alone computers, network workstations or portables.

Keyed software is registered with the KeyServer for the number of copies permitted to the company; keys can be checked out by traveling users. Most software companies try to work with Sassafras on KeyServer's site licensing and serialization, though some refuse. The result is that network managers won't recommend these companies' products.

"My co-workers and I have been using Sassafras' KeyServer for over five years now, and we are extremely pleased with their product," said Jeff Ray, an electrochemical engineer at a government installation that he would not identify. Ray has KeyServer running on about 600 Mac, Windows and Unix machines.

He said he finds that the server is "nearly bulletproof," and he enjoys the fact that KeyServer can now modify the installers for most of his company's applications so that the application's own installer keys the software as it is placed on the user's machine.

"This has allowed us to open up our application servers for self service, freeing up our support staff, making our power users more productive and reducing installation problems," Ray said.

Users of Saber LAN Workstation for Mac from McAfee Associates Inc. of Santa Clara, Calif., on the other hand, have voiced discontent with the service they've gotten on the product. This is not surprising, however, since it's being "retired" by McAfee.

"I paid $1,800 for an 80-user license of Saber LAN, but when I call McAfee for support, I get nowhere," said Gary Hoffman, computing service manager at the University of San Diego, who is now hunting around for new tools.

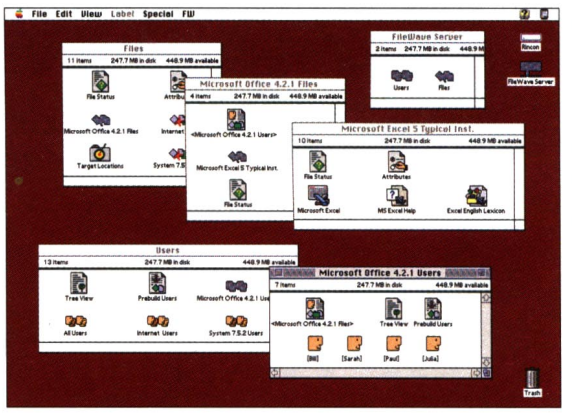
"It's like they have two Mac support people stuck away in a corner somewhere," Hoffman said. "We've had problems with the product. Installation is a pain. We find that we have a hard time diagnosing problems for some Macs.

"Other problems are that Excel 5.0 doesn't work or run if it's been distributed by Saber LAN, and when distributing Netscape [Navigator] 2.0, we discover that the app arrives on the user's Mac with a zero K size," Hoffman said. "Support has been terrible. The product is a very expensive disappointment."

Other products can pinch-hit for network managers when a native product is lacking. Server Manager from Santorini Consulting & Design Inc. of San Francisco is a favorite among managers for remotely administering AppleShare servers over the network, and Timbuktu Pro is usually the Swiss army knife that everyone pulls out when nothing else works.

"Even administration and software distribution over TCP/IP is possible via AppleTalk tunneling and Open Transport," said Network Frontiers' Cougias.

While some network managers simultaneously run multiple protocols on their networks to get around product limitations, Apple's Open Transport can provide a universal API for developers who want to support multiple transport protocols. □



FileWave offers a variety of reports allowing administrators to set file behavior, understand user-file relationships and gather information from user machines.

Keeping accurate inventory

One weak area of LAN administration packages is asset management. Currently, GraceLAN (which is built in ACI US Inc.'s 4th Dimension) from Mission Peak Software of Fremont, Calif., may be the only true stand-alone asset-management product on the Macintosh. This is unfortunate, since network inventory of hardware and software assets is critical for audits.

"We've just gone through a corporate audit, evaluating all of our hardware and software, where we had to have proof of purchase orders, serial numbers and so on," said Sue LaJoie, a computer specialist at NutraSweet Mt. Prospect, a Division of Monsanto, in Mt. Prospect, Ill. LaJoie tracks 200 Macs using GraceLAN.

"We did a corporate audit three years prior, and our documentation wasn't complete," LaJoie said. "It was a nightmare. This last audit was very clean because we'd established a biweekly routine of running GraceLAN Network Manager [Version 3.1] to gather network data and import it into GraceLAN Asset manager for our reports. By maintaining this process, we were able to satisfy corporate policies, which are far more stringent than government requirements for license compliance."

A co-worker of LaJoie's in another department uses netOctopus and a custom database to do the same thing, and her job is much harder, according to LaJoie.

— By Michael Miley

MACINTOUCH

From previous page

ware bug aggravated by System 7.5.3, and Global Village Communication Inc.'s TelePort Platinum modems with Version 2.5 and 2.6 software fail to answer the phone properly under the new system on Quadra/Centris AV models. Macintosh programmer Bill Steinberg documented the Apple bug and produced a patcher to fix it. The company subsequently released Apple Telecom 2.3.3, incorporating a fix. Global Village promises a future fix for the TelePort.

Kensington Microsystems Ltd. trackball software prior to Version 4.11 can cause crashes with Open Transport. Shiva Corp.'s Net Manager 3.5 utility for the LanRover/E is also incompatible with Open Transport, according to a reader, and another writes that Open Transport causes At Ease for Workgroups 3.0.1 to freeze at start-up on a Quadra. Others report that Macromedia Inc.'s Fontographer 4.1 freezes with Open Transport and AppleTalk enabled.

Drilling down

Connectix Corp.'s RAM Doubler 1.6.1 has two clear problems with System 7.5.3: Sleeping PowerBooks crash with Type 8 errors when waking, and Finder file copies can crash 68040-based Macs. The company is working on solving these issues and is investigating other matters, such as glitches with local tape drives and Dantz Development Corp.'s Retrospect, plus serial communications interactions.

PowerBooks crash on waking; Finder copies can crash 68040-based Macs.

An unofficial patcher created by Tony Andreoli addresses the PowerBook problem (ftp://www.ridgecrest.ca.us/pub/users/a/andreoli/7.5.3Update.hqx). Running Apple's MacsBug debugger also bypasses the problem, so programmers may not notice it.

We are investigating a hack that disables System 7.5.3's new 680x0 SCSI Manager code to help work around RAM Doubler's Finder copy issues.

RAM Doubler also creates some problems for Qualcomm Inc.'s Eudora e-mail program. A Qualcomm plug-in called sync i/o is a work-around (ftp://ftp.qualcomm.com/quest/mac/eudora/2.1/plug-synchio.hqx).

Asynchronous I/O is a feature introduced with SCSI Manager 4.3, and it seems to be at the heart of System 7.5.3 compatibility problems such as these. Running disk driver software that is not SCSI Manager 4.3-savvy with System 7.5.3 is asking for trouble.

Update the driver

Most formatters can update the driver software on its special hidden area of the disk without reformatting the whole drive, and Apple supplies new formatters with System 7.5.3 via the Custom install option.

Be sure to get the latest formatter release from a proven third-party vendor if you use third-party drives. (Selecting a disk icon on the desktop and choosing Get Info typically shows cryptic information about the driver software and version.)

Aladdin Systems Inc. found that problems with StuffIt Expander disappeared when disks were updated with current drivers, and other programs that make heavy use of asynchronous I/O, such as Adobe PageMaker, may show similar behavior.

Discussions in Digidesign Inc.'s section on CompuServe (go cis:mididven) describe a different kind of problem with SCSI Manager in System 7.5.3. According to the postings, new native SCSI code runs at a higher interrupt priority on Power Macs, creating timing problems for MIDI and real-time audio operations. Digidesign is working with Apple on the problem.

A few people have reported problems with key-disk copy-protection schemes under System 7.5.3. It would be wise to verify copy-protection compatibility before upgrading to the new system. □

Comments on MacInTouch are welcome at (508) 897-2621. Please address e-mail to ricford@macintouch.com on the Internet or 72511,44 on CompuServe. The MacInTouch home page is at http://www.macintouch.com/.

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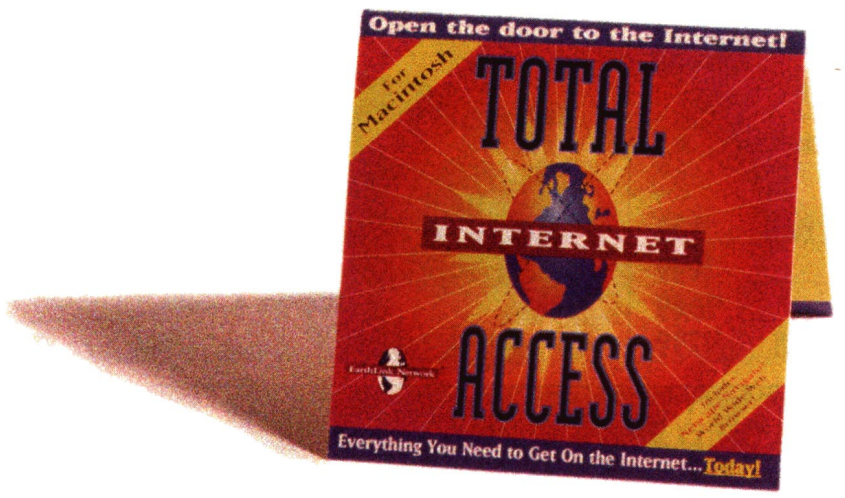

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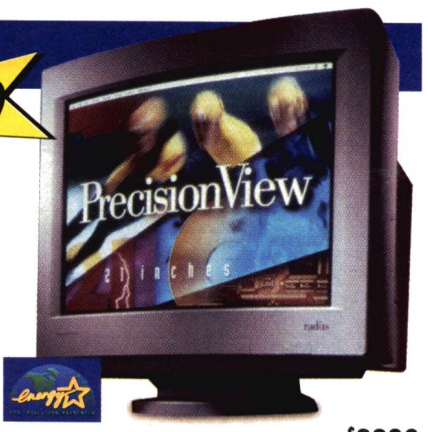

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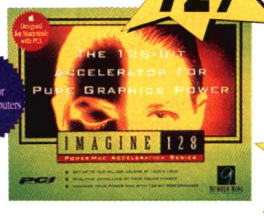

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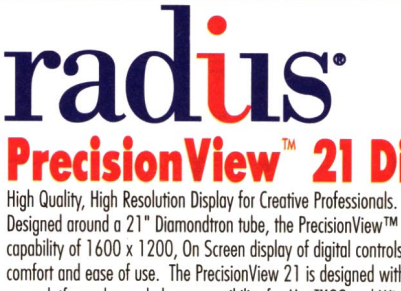

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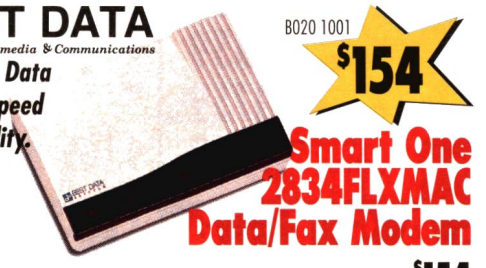

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E040 1070 **Adobe PostScript Level 2** Software Upgrade for Stylus Pro XL $265

HP DeskJet 855Cxi Printer

FEATURES
- ***COLOR PRINTER***
- Dual I/O for either PC or Macintosh connection
- Black print speed up to 7ppm
- Color print speed up to 3ppm
- Handles plain and special papers, transparency film, and envelopes

H047 1065 **HP DeskJet 855Cxi InkJet Printer** $499

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Technical Support	M - F 7am - 5pm PST	(800) 854-6227
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WARRANTIES: All items manufactured by ClubMac are returned to ClubMac for warranty repair. All other items carry manufacturer's warranty. MONEY BACK GUARANTEE: All products manufactured by ClubMac carry a 30 day money back guarantee. ClubMac extends all other manufacturers' return policies to its customers. Non-ClubMac products carry 30 day money back guarantee when specified. RETURNS: Call for RMA number! Any product that is returned WITHOUT an RMA number will be refused. ALL PRODUCT INFORMATION AND PRICES ARE SUBJECT TO CHANGE WITHOUT NOTICE. NOT RESPONSIBLE FOR TYPOGRAPHICAL ERRORS.

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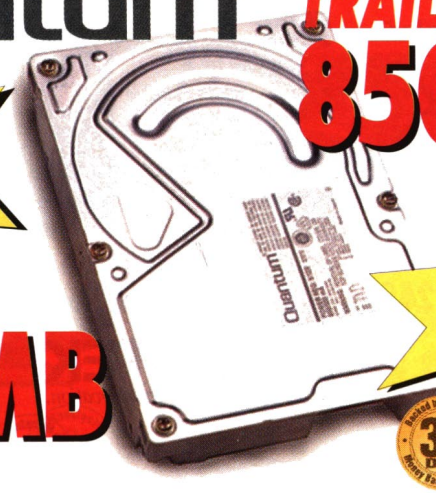
CLUBMAC HARD DRIVES

Quantum

Internal Fireball C104 0001

$239



TRAILBLAZER 850MB

14ms Access Time

Internal TrailBlazer C104 0002

$189

FIREBALL 1280MB

12ms Access Time

Backed by ClubMac's 30 DAY Money Back Guarantee

BEST BUY

Capacity	Model	Part No.	Internal	Part No.	External
850MB	Trailblazer 14ms	C104 0002	$189	C104 0052	$249
1080MB	Fireball 12ms	C104 0000	$239	C104 0050	$299
1280MB	Fireball 12ms	C104 0001	$269	C104 0051	$329

BEST BUY

$969

ATLAS 4.3GB 7200 RPM 1024K CACHE

Internal Atlas C104 0005

Backed by ClubMac's 5 Year Manufacturer's Warranty

Backed by ClubMac's 30 DAY Money Back Guarantee

Capacity	Model	Part No.	Internal	Part No.	External
2200MB	Capella 8.5ms	C104 0003	$599	C104 0053	$659
2150MB	Atlas 8ms	C104 0004	$699	C104 0054	$1759
4280MB	Atlas 8ms	C104 0005	$969	C104 0055	$1029

Seagate

C104 0301

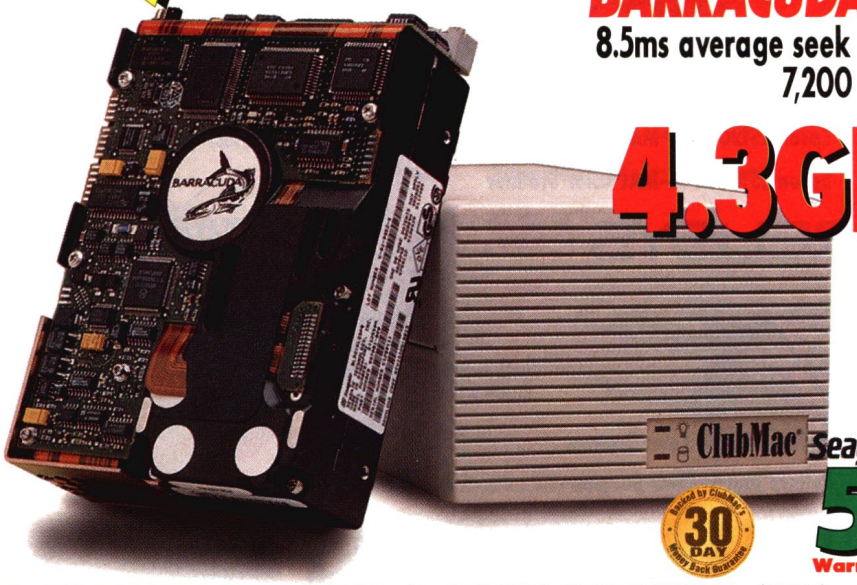
$1159

BARRACUDA 4

8.5ms average seek time

7,200 RPM

4.3GB



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5 YEAR Warranty

3.5" HALF HEIGHT & LOW PROFILE (LP)

Formatted Capacity	Model	Part No.	Internal	Part No.	External
1.0GB	Medalist 51080N	C104 0302	$269	C104 0352	$329
2.1GB	Hawk 2 32430N	C104 0303	$689	C104 0353	$749
2.5GB	Barracuda 2LP 32550N	C104 0300	$729	C104 0350	$789
4.3GB	Barracuda 4 15150N	C104 0301	$1159	C104 0351	$1219

5.25" FULL HEIGHT

9.1GB	Elite-9 410800N	C104 0305	$1999	C104 0355	$2099

CLUBMAC FAST AND WIDE DRIVES

Quantum

Backed by ClubMac's 5 Year Manufacturer's Warranty

Backed by ClubMac's 30 DAY Money Back Guarantee

2200MB	Capella VP32210SW	C104 0100	$699	C104 0150	$799
4280MB	Atlas XP34300 SW	C104 0102	$1029	C104 0152	$1129

Seagate

Backed by ClubMac's 5 Year Manufacturer's Warranty

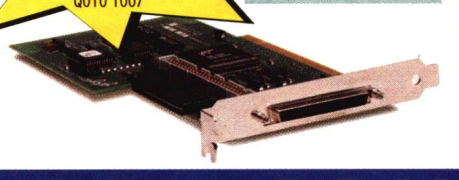
Backed by ClubMac's 30 DAY Money Back Guarantee

2.1GB	Barracuda 2LP ST32150W	C104 0400	$799	C104 0450	$899
4.3GB	Barracuda 4 ST15150W	C104 0401	$1229	C104 0451	$1329
9.1GB	ELITE 9 ST410800W	C104 0402	$2099	C104 0452	$2219

qlogic Corp.

$229

Q010 1007



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$389

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F094 1033	SCSI JackHammer PCI	$389
F094 1002	SCSI JackHammer NuBus	$459

CLUBMAC CD-ROM DRIVES

$179

C104 1500

ClubMac® 4X

Features:
600KB/sec data transfer
190ms avg access time
Caddy-less design

Backed by ClubMac's 1 Year Manufacturer's Warranty

Backed by ClubMac's 30 DAY Money Back Guarantee

C104 1500 **ClubMac QUAD-Speed CD-ROM Drive** $179

ClubMac®

		Access time	Trans Rate	
C104 1600	ClubMac Six-Speed CD-ROM Drive	140ms	900k/sec	$299
C104 1500	ClubMac Quad-Speed CD-ROM Drive	140ms	600k/sec	$179
C104 1400	ClubMac Classic 2X CD-ROM Drive	250ms	300k/sec	$99

NEC

		Access time	Trans Rate	
N024 1062	MultiSpin 6Xe CD-ROM Reader	150ms	900k/sec	$479
N024 1070	MultiSpin 4Xc 7 Disc Changer	350ms	600k/sec	$339
N024 1011	MultiSpin 3Xp plus Portable CD-ROM	240ms	500k/sec	$349

NEC

$339

N024 1070

MultiSpin 4Xc 7 Disc Changer

Load 7 Discs at a time!

Backed by ClubMac's 1 Year Manufacturer's Warranty

4X

N024 1070 **NEC MultiSpin 4Xc 7 Disc Changer** $339

CLUBMAC REMOVABLE STORAGE

ClubMac 200 MB SyQuest® Drive

Mac OS COMPATIBLE

$329
C104 1801

C104 1801 **ClubMac 200MB 5.25" Removable** $329

NEW LOW PRICES ON GENUINE SyQuest Cartridges

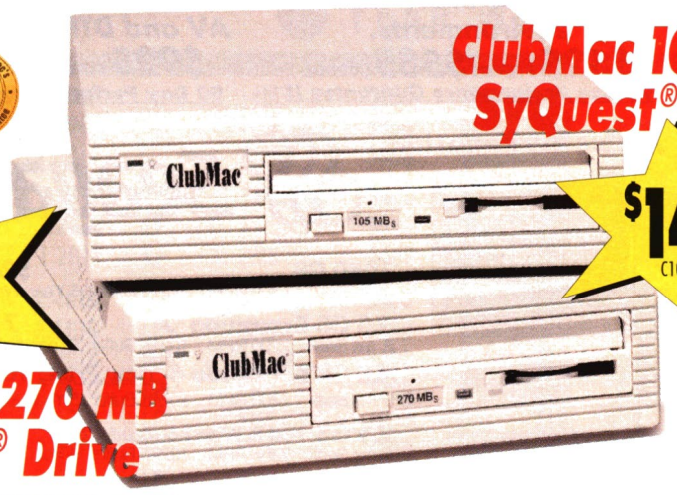
FEATURING SyQuest® REMOVABLE TECHNOLOGY

SyQuest 5 YEAR Warranty

SyQuest Media

Part Number	Media	Qty 1	Qty 10	Qty 20
S198 1010	**44MB**	$40ea	$39.50ea	$39ea
S198 1011	**88MB**	$44ea	$43.50ea	$43ea
S198 1012	**200MB**	$69ea	$68ea	$67ea
S198 1013	**105MB**	$35ea	$34.50ea	$34ea
S198 1014	**270MB**	$57ea	$56ea	$55ea
S198 2010	**EZ135MB**	$19ea	$18.50ea	$18ea

ClubMac 105 MB SyQuest® Drive



Mac OS COMPATIBLE

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$329
C104 1803

$149
C104 1802

ClubMac 270 MB SyQuest® Drive

C104 1803 **ClubMac 105MB 3.5" Removable** $149

C104 1802 **ClubMac 270MB 3.5" Removable** $329

SyQuest® EZ135 Drive

Includes One Free Cartridge

$199
S198 2001

Backed by ClubMac's 30 DAY Money Back Guarantee

Mac OS COMPATIBLE

EZ135 Drive

S198 2001 **SyQuest EZ135 135MB 3.5" Removable** $199

Zip Cartridge (100MB)		
I040 1006	1 Pack	$19.99
I040 1011	3 Pack	$49.99
I040 1010	10 Pack	$149.99

Zip Drive

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I044 1010

I044 1010 **Zip Drive with One 100MB Cartridge** $199.99

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CLUBMAC TAPE STORAGE

ClubMac® Tape Back-Up Drives

Manufacturer's 2 Year Warranty

Backed by ClubMac's 30 DAY Money Back Guarantee

C104 0900	**ClubMac 2-4GB SCSI QIC MiniCartridge Drive** (Cartridge not included)	$489
C104 1300	**ClubMac 2.0GB ThunderDAT Drive**	$749
C104 1301	**ClubMac 4-8GB DDS-2 DAT Drive**	$899
C104 1200	**ClubMac 4-8GB DDS-2 SuperDAT Drive**	$1059
C104 1302	**ClubMac 4-8GB Performance DAT Drive**	$1079
C104 0200	**ClubMac 40GB DLT Subsystem DLT 4000**	$4569
S100 1043	**Sony QW3080XLF QIC/WIDE 2-4GB Cartridge**	$29
V010 1018	**Verbatim 90M 4mm DAT Cartridge 2-4GB**	$9
S104 1008	**Sony 120M 4mm DAT Cartridge 4-8GB**	$29
Q034 1022	**1/2 inch media for DLT 4000**	$99
0029 1002	**Optima DeskTape Back-up Utility**	$99

DDS-2 DAT Drive

$899
C104 1301

Includes One Free DAT Tape

Mac OS COMPATIBLE

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- ClubMac hard drives include all cables, cords, leds, and brackets necessary for use with the Macintosh you specify. ClubMac formats all hard drives and installs Apple System 7.1 software, Charismac Anubis Driver, and PowerMerge LE.
- External drives include a Double Shielded, twisted pair 25-50 SCSI cable.
- ClubMac honors all original equipment manufacturers warranties. ClubMac will repair or replace drives at it's discretion. Drives returned within first 30 days of purchase are replaced with a new unit.
- All ClubMac hard drives include a 30 day money back guarantee. Your risk is the cost of shipping.

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All ProDirect hard drives come now come preformatted with and Include a copy of FWB Tool Kit.

Quantum

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11 ms Seek	4500 RPM	128K Buffer	3 Year Warranty		
535 MB	***Performance !***			**175**	**235**
9 ms Seek	5400 RPM	512K Buffer	5 Year Warranty		
850 MB	***Value!***			**199**	**259**
11 ms Seek	5400 RPM	128K Buffer	3 Year Warranty		
1080 MB	***Fireball***			**255**	**315**
11 ms Seek	5400 RPM	128K Buffer	3 Year Warranty		
1280 MB	***Fireball II***			**265**	**325**
11 ms Seek	5400 RPM	128K Buffer	***5 Year Warranty***		
2.2 GB	***Saturn***			**595**	**655**
8.5ms Seek	5400 RPM	1024K Buffer	5 Year Warranty		
2.0 GB	**Atlas *New Low Price!***			**695**	**755**
8ms Seek	7200 RPM	1024K Buffer	5 Year Warranty		
4.3 GB	**Atlas**			**955**	**1015**
8ms Seek	7200 RPM	2048K Buffer	5 Year Warranty		

Fast & Wide SCSI AV Drives

2.0 GB Atlas				**785**	**885**
8ms Seek	7200 RPM	1024K Buffer	5 Year Warranty		
4.2 GB ATLAS				**1015**	**1115**
8ms Seek	7200 RPM	1024K Buffer	5 Year Warranty		

90 Day Performance Guarantee !!

MICROPOLIS AV

GOLD Series AV Drives *Recommended most for AV work*

2.1 GB	***• Also Available in Fast & Wide SCSI 2***			**675**	**735**
Fast SCSI 2	8.5 ms Seek	7200 RPM	512K Buffer 5 Year Warranty		
4.3 GB	***• Also Available in Fast & Wide SCSI 2***			**1070**	**1130**
Fast SCSI 2	8.5 ms Seek	7200 RPM	512K Buffer 5 Year Warranty		
9.0 GB	***• Also Available in Fast & Wide SCSI 2***			**2035**	**2135**
Fast SCSI 2	11ms Seek	5400 RPM	512K Buffer 5 Year Warranty		

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CONNER

1060 MB	***Quiet & Reliable***			**$265**	**$325**
9 ms Seek	5400 RPM	512 KBuffer	5 Year Warranty		
2.1 GB	***Fast AV Performance!***			**695**	**755**
8 ms Seek	7200 RPM	512K Buffer	5Year Warranty		
2.1 GB	***Fast & Wide -AV Performance***			**825**	**925**
8 ms Seek	7200 RPM	512K Buffer	5 Year Warranty		
4.2 GB	***Fast AV Performance!***			**975**	**1035**
8 ms Seek	7200 RPM	512K Buffer	5 Year Warranty		
4.2 GB	***Fast & Wide -AV Performance***			**1075**	**1175**
8 ms Seek	7200 RPM	512K Buffer	5 Year Warranty		

90 Day Performance Guarantee !!

SyQuest TECHNOLOGY

DRIVES

Capacity	Model	External
88 MB	SQ5110C	$345
135MB	SQEZ135	225
200 MB	SQ5200	395
270 MB	SQ3270	405

CARTRIDGES

Capacity	Price
44 MB	**$40**
88 MB	**45**
135 MB	**19**
200 MB	**70**

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New! From IBM

AV SPEED • IBM RELIABILITY • PRODIRECT PRICES!

- ***INDUSTRY LEADING MR HEAD TECHNOLOGY PRODUCES THE BEST TRANFER RATES AVAILABLE!***
- ***IDEAL FOR YOUR MOST INTENSE AV OR DTP NEEDS...AN IDEAL SCRATCH DISK***
- ***1,000,000 HOURS MEAN TIME BETWEEN FAILURE , 5 YEAR WARRANTY, 1 YEAR ADVANCE EXCHANGE WARRANTY... NEVER HAVE ANY DOWN TIME***
- ***TRUE 7200 RPM SPEED, NOT SIMULATED SPEED LIKE OTHERS' IMITATIONS***

540 MB *DESKSTAR*

•9 ms Seek •5400 RPM
•128K Buffer •5 Year Warranty
$155 INTERNAL **$215** EXTERNAL

1080 MB *STARFIRE*

•8 ms Seek •7200 RPM
•512K Buffer •5 Year Warranty
$279 INTERNAL **$339** EXTERNAL

2.2 GB *ULTRA XP*

•8 ms Seek •7200 RPM
•512K Buffer •5 YearWarranty
•MR Head Technology
All drives come preformatted with FWB for Maximum performance in AV and DTP environments.
$525 INTERNAL **$585** EXTERNAL
90 Day Performance Guarantee !!

4.2 GB *ULTRA XP*

•8 ms Seek •7200 RPM
•512K Buffer •5 YearWarranty
•MR Head Technology
All drives come preformatted with FWB for Maximum performance in AV and DTP environments.
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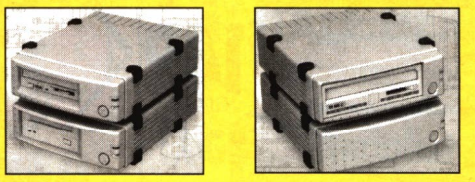
Stackable ***Active Termination***



Seagate

1080 GB				**$265**	**$325**
9 ms Seek	5400 RPM	512 KBuffer	5 Year Warranty		
2.5 GB Barracuda 2				**715**	**775**
8 ms Seek	7200 RPM	1024K Buffer	5Year Warranty		
4.3 GB Barracuda 4	***New Price!***			**1025**	**1085**
8 ms Seek	7200 RPM	1024K Buffer	5 Year Warranty		
2.5 GB	**Fast & Wide Barracuda 2**			**755**	**855**
8 ms Seek	7200 RPM	1024K Buffer	5 Year Warranty		
4.3 GB	**Fast & Wide Barracuda 4**			**1185**	**1285**
8 ms Seek	7200 RPM	1024K Buffer	5 Year Warranty		
9.0 GB	**Elite**			**1995**	**2095**
11 ms Seek	5400 RPM	1024KBuffer	5 Year Warranty		
9.0 GB	**Fast & Wide Elite**			**2195**	**2325**
11 ms Seek	5400 RPM	1024KBuffer	5 Year Warranty		

90 Day Performance Guarantee !!

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IBM TravelStar12 ms Seek	4900 RPM	128K Buffer	1Year Warranty		
Quantum 1280 MB	***Fireball II***			**$265**	**$325**
11 ms Seek	5400 RPM	128K Buffer	***5 Year Warranty***		
IBM 2.0GB	**Ultra XP**			**$565**	**$585**
8ms Seek	7200 RPM	512K Buffer	5 Year Warranty		
Seagate 4.2GB	***Barracuda 4***			**$1025**	**$1085**
8 ms Seek	7200 RPM	1024K Buffer	5 Year Warranty		
Seagate9.0 GB Elite				**$1995**	**$2095**
11 ms Seek	5400 RPM	1024KBuffer	5 Year Warranty		

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3-5 GB	35480	4mm	**995**	**1055**
4-8 GB	1533A	4mm	**1235**	**1295**
24-48 GB	1553A Auto Tape Loader		**3195**	**3295**

Exabyte

Capacity	Model	Media	Int.	Ext.
2-5 GB	8205XL	8mm	**$1395**	**$1485**
7-14 GB	8505XL	8mm	**2055**	**2115**

Quantum

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DLT4000 **$5435**
40GB Capcity•*TRANSFER RATE 180 MB PERMINUTE*

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2x Yamaha CDE 1020 2x CD Writer• 4x CD ROM	**$1175**
4 x Yamaha CDE 100 *New Price!* 4 x CD Writer•Multisession•Selectable Speed	**$1895**

Includes TOAST PRO CD Writer Software
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"Your next option is to locate...highly visible digital video suppliers like Direct Connections." **NEWMEDIA June '95**
"This array is the one to beat." **Ken Grey** Writer for WIRED, Computer User, MovieMaker, Computer Video, and Digital Video Magazine.
"Stick with a vendor such as Direct Connections that understands how to prepare a RAID for desktop video." **MacWorld April '95**

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Seagate Hawk 2XL

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- Ultra SCSI 3
- PRML
- Low profile
- Embedded Servo
- 3 yr warranty
- $ 399

5 YEAR WARRANTY

BRAND/MODEL	CAPACITY		ACCESS	RPM	INTERNAL	EXTERNAL
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Hitachi 2.5" IDE***	810MB		14MS	5400	$ 339	
Hitachi 2.5" IDE***	1.0GIG		14MS	5400	$ 425	
Conner CFP1080	1.2GIG	LP	11MS	5400	$ 295	$ 365
Seagate ST51080N ***	1.2GIG	LP	12.5MS	5400	$ 290	$ 360
Seagate Hawk 2XL***	1.2GIG	LP	9MS	5400	$ 399	$ 469
Seagate Hawk	2.4GIG	LP	9MS	5400	$ 655	$ 725
Conner CFP2107S	2.1GIG	LP	8MS	7200	$ 759	$ 829
Quantum Capella	2.2GIG	MR	8.6MS	5400	$ 699	$ 799
Quantum Atlas	2.1GIG	LP	8MS	7200	$ 695	$ 765
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Seagate Barracuda 2W	2.5GIG	LP	8MS	7200	$ 775	$ 855
Conner CFP2107W	2.5GIG	LP	8MS	7200	$ 795	$ 895
Fujitsu M2934S	4.2GIG	MR	8MS	7200	$ 1075	$ 1145
Fujitsu M2934Wide	4.2GIG	MR	8MS	7200	$ 975	$ 1045
Seagate Barracuda 4	4.1GIG		8MS	7200	$ 1195	$ 1265
Seagate Barracuda 4W	4.1GIG		8MS	7200	$ 1255	$ 1325
Seagate Hawk4	4.3GIG		9MS	5400	$ 899	$ 999
Conner CFP4207S	4.2GIG		9MS	7200	$ 999	$ 1069
Conner CFP4207wide	4.2GIG		9MS	7200	$ 1099	$ 1199
Quantum Atlas	4.3GIG		8.6MS	7200	$ 999	$ 1069
Seagate Elite 9	9.0GIG		11MS	5400	$ 2095	$ 2195
Seagate Elite 9W	9.0GIG		11MS	5400	$ 2295	$ 2395

CD RECORDERS/PLAYERS

Ricoh 2 speed recorder / 2 speed player

4 speed Recorder
4 speed Player
4 GIG Hard drive
10 Blank CD's
1 Toast Software
$2795

Includes Free software and 2 CD's

Yamaha 4 speed Recorder / 4 Player	External	$ 1749
Yamaha 2 speed Recorder / 4 speed Player	External	$ 1145
Yamaha 2x4 Recorder with built in hard drive	External	$ 1529
Pioneer 4 speed 6-Disc CD-ROM Changer	External	$ 325
Toshiba 3701 6 speed CD Player	External	$ 370
Pioneer 4 speed CD Player	External	$ 255

CD Network Archiving, Libraries, and Recording. All Platforms.

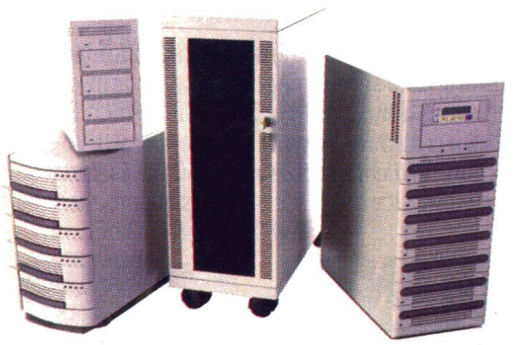
MEDIA

128MB	Optical	$ 15	10 Blank CD's	$ 69
230MB	Optical	$ 25	90M 4MM Tape	$ 8
1.3GIG	Optical	$ 69	160M 8MM Tape	$ 18

"Stick with a vendor such as Direct Connections that understands how to prepare a RAID for desktop video." MacWorld April '95

RAID SYSTEMS

FAST DESKTOP OR SERVER



- **28mb/sec sustained sequential Writes.**
  Tested with MacBench on PowerMac 9500.
  12GIG with 2 PCI accelerator cards **$ 7799**

From Hardware RAIDS to Software RAIDS, we'll show you how to configure the best system to meet your needs.

Atto Silicon Express IV	$ 835
Atto Express PCI MC	$ 765
Atto Express PCI SC	$ 345
Adaptec AHA-2940UW	$ 245
SCSI Expander	$1345

External, Remus software, and cabling

- 4 GIG Fast and Wide Raid $ 2199
- 8 GIG Fast and Wide Raid $ 2799
- 16 GIG Fast and Wide RAID $ 6130
- 28 GIG Fast and Wide RAID $ 9499
- 40 GIG Fast and Wide RAID $ 15599

MEDIA 100 TARGA 2000 radius

OPTICAL DRIVES

2.6GIG Sony Optical for $1959 external including all cabling, and software!!

CAPACITY	MODEL	EXTERNAL
230MB	Fujitsu	$ 499
1.3GB	NEC	$ 1295
1.3GB	Sony 4MB cache	$ 1695
2.6GB	Hitachi	$ 1895
2.6GB	Sony	$ 1959
26GB	Sony Jukebox	$ 4695
52GB	Sony Jukebox	$ 6295

1 YEAR WARRANTY

TAPE BACK-UP

We are the tape-backup Experts

2 YEAR WARRANTY

With 2.5MB/sec sustained transfer, the DLT2000XT is perfect for digital video or pre-press with large data files.

All systems include one tape cartridge, cabling, and Retrospect software.

CAPACITY	MODEL	MEDIA	INTERNAL	EXTERNAL
-4GIG	Tandberg Panther	1/4"	$ 469	$ 539
-8GIG	Sony 7000 DDS-2* 1.5MB/sec	4MM	$ 1199	$ 1299
-14GIG	Exabyte 8505XL	8MM	$ 2065	$ 2125
-14GIG	Exabyte 8700	8MM		$ 1575
-30GIG	DLT2000XT	1/2"		$ 3299
-40GIG	DLT4000	1/2"		$ 4999
-140GIG	Exabyte-10h Library	8MM		$ 4999
-200GIG	Spectra Logic 4000	4MM		$ 8599
-200GIG	DLT4500 Loader	1/2"		$ 8999

DIRECT CONNECTIONS 7668 Executive Drive Eden Prairie, MN 55344 Gov't, Corp, and Univ. P.O's accepted. *1YR Warranty 30 day money back does not apply towards media and software.

GREAT PRODUCTS... PRICELESS SUPPORT

APS Technologies

2.6GB OF OPTICAL STORAGE

ULTRA RELIABLE

JUST $1799.95

External configuration

APS 2.6GB MO

- ✔ Terrific value
- ✔ Our highest capacity removable media device
- ✔ 4MB cache buffer improves drive performance
- ✔ Up to 2.4GB formatted capacity on a single, double-sided cartridge

Its terrific capacity makes the APS 2.6GB MO a great storage solution for large image files, network storage, and other demanding data storage applications. To improve data throughput and handling of large files, the drive uses a huge 4MB cache buffer which is further optimized by special cache algorithms. The drive is also read / write compatible with other ISO-standard 2.3GB and 1.3GB MO cartridges and is read compatible with 650MB cartridges.

MORE MEGS THAN EZ, ZIPPIER THAN ZIP!

APS SQ 3270 – 255MB REMOVABLE

- ✔ 2-year warranty
- ✔ 1.7MB/sec. transfer rates
- ✔ Packs up to 255MB on each 3.5" cartridge
- ✔ Best performing removable cartridge drive

WHILE SUPPLIES LAST! $299.95* External configuration

*Only with the purchase of one SQ 270 cartridge

LABS	Capacity	Access	Seek	Read Trans.	Write Trans.	Warranty	Price per MB
APS SQ 3270	255MB	27ms	13ms	1.8m/sec.	1.6m/sec.	2-year	$1.17
Zip	96MB	45ms	33ms	1.0m/sec.	1.0m/sec.	1-year	$2.07
EZ135	128MB	27ms	13ms	1.1m/sec.	0.8m/sec.	1-year	$1.80

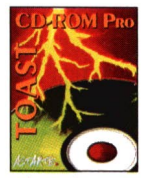
LOWEST PRICE EVER ON CD-R!

APS CD-R

$899.95 External configuration

- ✔ Uses CD media with 100-year shelf life
- ✔ Random access gives you fast retrieval
- ✔ TOAST CD-ROM Pro software – FREE
- ✔ 1-year warranty

At the lowest price ever for 2x CD-R technology, the APS CD-R is a fantastic value for authoring, mastering or backing up to CDs. CD-R media costs less than 2¢ per MB and has an estimated 100-year shelf life. The APS CD-R has a giant 1MB cache buffer and supports all popular CD formats specified in the Orange Book Part II. The APS CD-R comes with a FREE copy of the award-winning TOAST CD-ROM Pro recording software.



A $500 value – FREE

APS SYQUEST DRIVES

Model	Capacity/Feature	Awards	Internal	SR2000
APS SQ 3270	255MB Our best performing removable cartridge drive		N/A	$299.95*
APS SQ 5200	194MB Ultimate storage flexibility		N/A	389.95

While supplies last! CALL NOW! *SQ 270 Cartridge $59.95*

APS CD-ROM DRIVES

Model	Features	Awards	Internal	SR2000
APS T 3701	6.7X-SPEED Sustained data transfer rates up to 1000KB per second!		$249.95	$299.95
APS PD4	CD-ROM/Removable Optical 600MB optical storage with 4X CD-ROM in one device		N/A	499.95*
APS CD-R	Recordable CD-ROM FREE TOAST CD-ROM Pro recording software ($500 value)	NEW LOW PRICE	N/A	899.95*
APS CD-R Pro	4X4 Performance CD-R FREE TOAST CD-ROM Pro recording software ($500 value)	NEW LOW PRICE	N/A	1799.95*‡
APS CD-R Mastering System	4X read/4X write recording engine and a 4GB AV scratch disk		N/A	2999.95†*

While supplies last! CALL NOW! *†Also available with a 2GB hard disk*

APS MO DRIVES

Model	Capacity/Features	Awards	SR2000
APS 230MB MO Olympus Mechanism	4500 rpm drive		$449.95
APS 2.6GB MO Olympus Mechanism	NEW FROM APS 4MB cache		1799.95

APS QIC & DAT TAPE BACKUP SYSTEMS

Model	Capacity/Features	Awards	Internal	SR2000
APS HyperQIC™ QIC 3080 Mechanism	2GB	MacWeek	N/A	$499.95
APS DAT DDS-1 Non-Compression Mechanism	2GB		$649.95	699.95
APS HyperDAT® DDS-2 Compression Mechanism	8GB		849.95	899.95
APS HyperDAT® Pro DDS-2 High-Speed Mechanism	8GB		1049.95	1099.95

APS HyperDAT®

$899.95 External configuration

- ✔ Up to 8GB of storage on one 120m DAT tape*
- ✔ High transfer rates of up to 28MB per minute*
- ✔ Compatible with all DDS-1 and DDS-2 media
- ✔ Includes the latest Retrospect 3.0 backup software – FREE

Delivering backup speeds as high as 28MB per minute, this DDS-2 backup system can pack up to an incredible 8GB on a single 120m DAT tape!* Perfect for office and network backup and archiving!

*With hardware compression
*Assumes 2:1 compression ratio

POWER MATCHED FOR POWER PC These products are performance-matched for optimal performance in the PowerPC environment.

APS DLT TAPE BACKUP SYSTEMS

Model	Capacity/Features	Awards	Full-Height
APS DLT30 Digital Linear Tape Mechanism	30GB	MACUSER EDITORS' CHOICE AWARD 1995 FINALIST	$3999.95
APS DLT40 Digital Linear Tape Mechanism	40GB		5499.95
APS DLT4500 Loader Digital Linear Tape Mechanism	200GB		9999.95
APS DLT4700 Loader Digital Linear Tape Mechanism	280GB		11499.95

All APS tape drives include Retrospect® by Dantz®

APS MEDIA SALE

SyQuest® SALE PRICE

SQ-400 (44MB)	$39.95
SQ-800 (88MB)	44.95
SQ-327 (270MB)	54.95

3M SALE PRICE

106148 2.6GB MO CART. $99.95

SALE PRICE

105299 74MB CD-R MEDIA $7.95

fuji SALE PRICE

DLT III CARTRIDGE	$39.95
DLT IV CARTRIDGE	99.95

maxell SALE PRICE

60M DAT	$5.95
90M DAT	9.95

SONY SALE PRICE

106151	3-PK 128MB MO	$59.95
106152	3-PK 230MB MO	79.95

*Available only in full-height case

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APS TECHNOLOGIES

HIGH PERFORMANCE 1.2GB

Call us 24 hours a day, 7 days a week

APS Q 1280

JUST $269.95

Internal configuration
SCSI Interface
Quantum

- ✔ 5400 rpm mechanism
- ✔ 3-year warranty
- ✔ High areal density and PRML read channel
- ✔ Fast ATA-2 version available for just $239.95

Finally there's a hard drive that combines the reliability of a 5400 rpm mechanism with high performance. The new APS Q 1280 is capable of 4.39MB per second sustained writes and 5.50MB per second sustained reads, making it great for any demanding application. It is backed by a 3-year warranty and supports a 500,000 hour MTBF.

OVER 4GB AT A GREAT PRICE!

APS ST 4200

NOW JUST $889.95

Internal configuration
Seagate

- ✔ Great value and reliability
- ✔ 5400 rpm mechanism
- ✔ 512K cache buffer boosts performance
- ✔ 5-year warranty

Upgrading your system to store even more files has never been easier on your wallet. The new APS ST 4200 is our lowest priced 4GB drive ever, and delivers terrific performance. It employs a 5400 rpm Seagate Hawk ST15230N mechanism and a 512K cache buffer. For value and reliability the APS ST 4200 is hard to top.

7200 RPM PERFORMANCE, 5400 RPM PRICE

APS MS 2000

JUST $499.95

Internal configuration
MICROPOLIS

- ✔ 7.31MB/sec. sust. write, 4.54MB/sec. sust. read
- ✔ 5400 rpm mechanism
- ✔ Performs like a 7200 rpm drive
- ✔ 5-year warranty

That's right, this incredible drive has the performance you'd expect from a 7200 rpm mechanism but with a 5400 rpm drive's price – and reliability! The APS MS 2000 formats to 2047MB, delivers sustained reads at up to 4.54MB/sec. and sustained writes at up to 7.31 MB/sec, has an average access time of 20ms and avg. seek of 9.6 ms. It has a 5-year warranty and is rated at 650,000 MTBF.

MacWorld Magazine World Class Award

MacUser Editor's Choice Award

Consultants Choice Award

APS SCSI DRIVES

Model	Capacity/Features	Awards	Internal	SR2000
APS Q 840 Quantum 840 Trailblazer	811MB 4500 rpm	MacUser 4½	$189.95	NEW LOW PRICE $259.95
APS Q 1080 Quantum 1080 Fireball	1042MB 5400 rpm	MacWeek, MacUser 4½	239.95	299.95
APS Q 1280 Quantum Fireball II 1280	1222MB 5400 rpm	Power Matched	269.95	369.95
APS I 2160 IBM Ultrastar ES	2063MB 5400 rpm	Power Matched	479.95	579.95
APS MS 2000 Micropolis 4421	2047MB 5400 rpm	Power Matched	499.95	599.95
APS Q 2210* Quantum Capella	2047MB 5400 rpm	MacUser 4½	599.95	699.95
APS ST 4200 Seagate ST 15230N Hawk	4094MB 5400 rpm	MacUser 4½	889.95	NEW LOW PRICE 989.95

While supplies last

APS IDE DRIVES FOR MACINTOSH

Model	Capacity/Features	Internal
APS Q 1280A Quantum Fireball II 1280	1222MB 5400 rpm (Fast ATA-2)	$239.95
APS ST 2140A Seagate Medalist ST32140A	2167MB 5400 rpm (Fast ATA-2)	349.95

To receive an automated fax listing of all APS documents, call 800-374-5802 from any touch-tone telephone

Then call 816-920-4150 from a fax machine with a handset or fax modem and follow the instructions.

APS HIGH-PERFORMANCE SCSI DRIVES

Model	Capacity/Features	Awards	Internal	SR2000
APS MS 2.0 Micropolis 4221	1955MB 7200 rpm	Power Matched, MacUser 4½	$599.95	$699.95
APS MS 2.0AV Micropolis 4221AV	1955MB 7200 rpm	Power Matched	699.95	799.95
APS Q 2.0 Quantum Atlas XP32150	2050MB 7200 rpm	Power Matched, MacUser 4½	699.95	799.95
APS ST 2.0 Seagate ST 32550N	2047MB 7200 rpm		749.95	849.95
APS MS 4.0 Micropolis 3243	4064MB 7200 rpm	Power Matched, MacUser 4½	999.95	1099.95
APS Q 4.0 Quantum Atlas XP34300	4101MB 7200 rpm	Power Matched, MacUser 4½	949.95	NEW LOW PRICE 1049.95
APS MS 4.0AV Micropolis 3243AV	4064MB 7200 rpm	Power Matched	1099.95	1199.95
APS ST 4.0 Seagate ST 15150N	4094MB 7200 rpm	MacWeek, MacUser 4½	1199.95	1299.95
APS MS 9.0 Micropolis 1991	8669MB 5400 rpm		1899.95	2099.95*
APS MS9.0AV Micropolis 1991AV	8669MB 5400 rpm	MacUser 4½	1999.95	2199.95*
APS ST 9.0 Seagate ST410800N	8669MB 5400 rpm	NEW LOW PRICE	2099.95	2299.95*

- 30-day money-back guarantee on all APS brand products. Your risk is the cost of shipping.
- Drive-for-Drive Repair or Replacement Warranty. APS will, at its discretion, replace or repair products found to be defective according to the terms of the product's warranty.
- Refused orders subject to 20% restocking fee.
- Listed capacities are formatted.
- Actual data compression and tape capacity vary greatly depending on the type of data recorded, either system parameters and environment.
- Internal hard drives include brackets, cables, cords and LEDs required for operation with the specified Macintosh where applicable. External SCSI-2 drives come with a premium SCSI cable, power cord and user guide.
- All hard drives from APS Technologies come preformatted with Apple's System 7.0.1 software, and APS Technologies' APS PowerTools SCSI formatter/hard disk partitioner. You may need to install system software appropriate to your machine before use.
- Prices and specifications are subject to change without notice. Not responsible for typographical errors.
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APS FAST/WIDE SCSI DRIVES

Model	Capacity/Features	Awards	Internal	SR2000
APS MS 2.0W Micropolis 4221W	1955MB 7200 rpm	Power Matched	$699.95	$799.95
APS Q 2.0W Quantum Atlas XP32150W	2050MB 7200 rpm	Power Matched	799.95	899.95
APS MS 4.0W Micropolis 3243W	4064MB 7200 rpm	Power Matched	1099.95	1199.95
APS Q 4.0W Quantum Atlas XP34300W	4101MB 7200 rpm	Power Matched	1079.95	1179.95

FAST/WIDE ADAPTER CARDS

Model	External SCSI Connection	Internal
QLogic Fast!SCSI Mac PCI-W Adapter for Fast/Wide drives	HD 68-Pin	$379.95
SiliconExpress IV For NuBus Quadras & Power Macs only. Fast/Wide adapter card.	HD 68-Pin	849.95

APS IDE POWERBOOK DRIVES

Model	Capacity/Features	Awards	Internal
APS Q 810 Quantum Europa	778MB 3800 rpm, Fast ATA-2		$379.95
APS Q 1.08 Quantum Europa	1037MB 3800 rpm, Fast ATA-2		474.95

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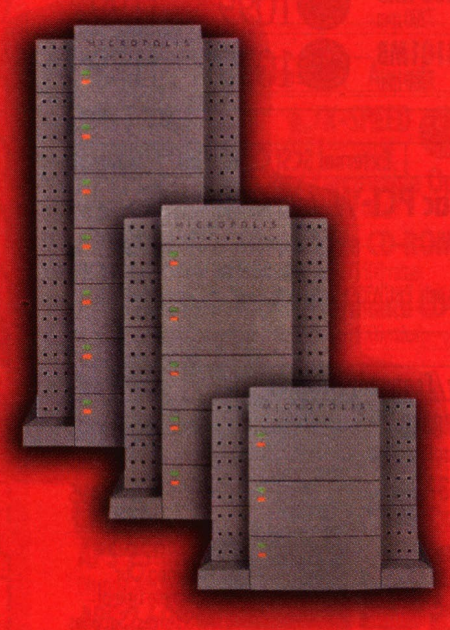
*7200 RPM
*512 K Buffer
*5 - Year Warranty
*Internal Configuration



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THE STACKABLE, REMOVABLE DRIVE SUBSYSTEM

Model #	Capacity
MDLT2100/AV	2.1 GB
MDLT4300/AV	4.3GB
MDLS9100/AV	9.1GB

NOW AVAILABLE IN FAST/WIDE CONFIGURATION.
ASK ABOUT THE MICRODISK RAID 5 ARRAY!

CALL FOR LATEST PRICING AND CONFIGURATION.

HARD DRIVES

ALL DRIVES ARE PREFORMATTED, TESTED AND PACKAGED WITH SCSI MANAGER 4.3 COMPATIBLE DRIVERS. EXTERNAL DRIVES INCLUDE CHOICE OF 25-50 OR 50-50 PIN CABLE.

Capacity	Model No.	Mechanism	Seek	Warranty	Internal	PHASER-I
420 MB	DT-420TB	Quantum	11ms	2 yrs	$150	$225
850 MB	DT-850TB	Quantum	11 ms	2 yrs	$199	$275
1.05 GB	DT-51080	Seagate NEW LOW PRICE!	10.0 ms	5 yrs	$269	$344
1.0 GB	DT-1080FB	Quantum	11ms	3 yrs	$269	$344
1.05 GB	DT-31230	Seagate NEW LOW PRICE!	9.0 ms	5 yrs	$380	$455
2.0 GB	DT-4221	Micropolis NEW LOW PRICE!	8.0 ms	5 yrs	$545	$625
2.0 GB	DT-2490	Hewlett Packard	9.0 ms	5 yrs	$950	$1,050
2.1 GB	DT-32550	Seagate Barracuda II NEW LOW PRICE!	8.0 ms	5 yrs	$725	$800
4.3 GB	DT-3243	Micropolis NEW LOW PRICE!	8.5 ms	5 yrs	$999	$1,075
4.3 GB	DT-15230	Seagate Hawk 4 NEW PRODUCT!	9.0 ms	5 yrs	$899	$975
4.3 GB	DT-15150	Seagate Barracuda NEW LOW PRICE!	8.0 ms	5 yrs	$1,175	$1,250
9.0 GB	DT-1991	Micropolis NEW LOW PRICE!	12 ms	5 yrs	$1,950	$2,050
9.0 GB	DT-410800	Seagate Elite 9 NEW LOW PRICE!	11 ms	5 yrs	$2,025	$2,125

AUDIO/VIDEO TUNED DRIVES

DIRECTTECH SYSTEMS IS AN AUTHORIZED A/V PARTNER WITH SEAGATE AND MICROPOLIS.

Capacity	Model No.	Mechanism	Seek	Warranty	Internal	PHASER-I
1.05 GB	DT-31230AV	Seagate	9 ms	5 yrs	$380	$455
2.0 GB	DT-4221AV	Micropolis NEW LOW PRICE!	8.5 ms	5 yrs	$600	$775
2.1 GB	DT-32550AV	Seagate Barracuda	8.0 ms	5 yrs	$725	$800
4.3 GB	DT-3243AV	Micropolis NEW LOW PRICE!	8.5 ms	5 yrs	$1,050	$1,125
4.3 GB	DT-15150AV	Seagate Barracuda	8.0 ms	5 yrs	$1,175	$1,250
9.0 GB	DT-1991AV	Micropolis NEW LOW PRICE!	12 ms	5 yrs	$2,050	$2,150
9.0 GB	DT-410800AV	Seagate Elite 9 NEW LOW PRICE!	11 ms	5 yrs	$2,025	$2,125

FAST/WIDE SCSI DRIVES

MOST EFFECTIVE WHEN COMBINED WITH A FAST/WIDE ATTO BOARD. CALL FOR SPECIAL CONFIGURATIONS!

Capacity	Model No.	Mechanism	Warranty	Internal	PHASER-I
2.1 GB	DT-32550W	Seagate Barracuda 2LP Wide	5 yrs	$799	$899
2.1 GB	DT-4221W	Micropolis 4221Wide	5 yrs	$625	$725
4.3 GB	DT-15150W	Seagate Barracuda 4 Wide	5 yrs	$1,225	$1,325
4.3 GB	DT-3243W	Micropolis 3243Wide	5 yrs	$1,050	$1,150
9.0 GB	DT-1991W	Micropolis 1991Wide	5 yrs	$2,085	$CALL
9.0 GB	DT-1991AVW	Micropolis 1991AVWide	5 yrs	$2,185	$CALL
9.0 GB	DT-410800W	Seagate Elite 9 Wide	5 yrs	$CALL	$CALL

DISK ARRAYS/RAID

MEDIA 100 * RADIUS * DIGITAL VIDEO * TARGA 2000
ARRAYS INCLUDE - ATTO CARD, REMUS & 2 FAST/WIDE DRIVES

Capacity	Model No.	Mechanism	Seek	Warranty	EXTERNAL
4.0 GB	DT-32550W-2	Seagate - Fast/Wide Barracuda 2LP (2)	4.0 ms	5 yrs	$CALL
8.0 GB	DT-3243WAV	Micropolis - Fast/Wide 3243AV (2)	4.0 ms	5 yrs	$CALL
18.0 GB	DT-1991WAV	Micropolis - Fast/Wide 1991AV (2)	4.0 ms	5 yrs	$CALL

CALL FOR MORE INFORMATION ON DIRECTTECH DISK ARRAYS!

ATTO Silicon Express IV	Nubus Fast/Wide Accelerator	$CALL
ATTO Express PCI	Dual Channel - PCI -Fast/Wide	$CALL
ATTO Express PCI	Single Channel - PCI-Fast/Wide	$CALL

MICROPOLIS
Seagate
HEWLETT PACKARD
Quantum
SyQuest
JVC

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FAX ORDERS: (612) 942-0430

SYQUEST

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Capacity	Model No.	Internal	PHASER-I
88 MB	SQ5110C	$305	$365
200 MB	SQ5200	$420	$480
270 MB	SQ3270	$420	$470

CD ROM RECORDABLE

JVC Personal Archiver (2X)	$1,165
JVC Personal Archiver (4X)	$2,499
Yamaha CD Recorder (4X)	$1,699

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TAPE

INCLUDES A FREE COPY OF RETROSPECT AND ONE TAPE

Capacity	Model No.	Format	PHASER-I
2 GB	HP-35470	4mm	$950
4-8 GB	Sony-5000	DDS-2	$999
4-8 GB	HP-1533A	DDS-2	$1,250
5-10 GB	Exabyte-8505	8mm	$2,150
15-30 GB	DLT-2000XT	DLT	$4,399

OPTICAL

INCLUDES ANUBIS FORMATTING SOFTWARE AND ONE CARTRIDGE

Capacity	Model No.	Seek	PHASER-I
230 mb	Fujitsu	30 ms	$675
1.3 GB	HP-C1716	23 ms	$1,999
1.3 GB	Maxoptix T-III	18 ms	$2,199

MEDIA

Type	Price
Syquest 44	$40
Syquest 88	$46
Syquest 105	$54
Syquest 200	$76
Syquest 270	$60
Optical 128 MB	$22
Optical 230 MB	$30
Optical 1.0 GB	$100
Optical 1.3 GB	$90

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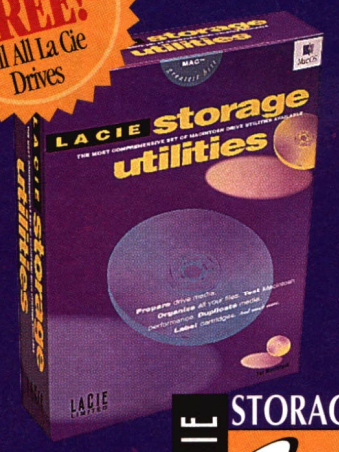
offers a world of storage solutions

La Cie Storage Utilities FREE!* Will All La Cie Drives



All products bearing this Storage Utilities mark include acclaimed Silverlining Disk management software plus four other vital performance enhancements, a $99 value... ***FREE!***

30 Day Money Back Guarantee

Toll Free Technical Support

Factory Direct Quality & Value

Ready to Plug And Play

INTERNAL HARD DRIVES

Special LOW Price

- High-performance drive and controller technology.

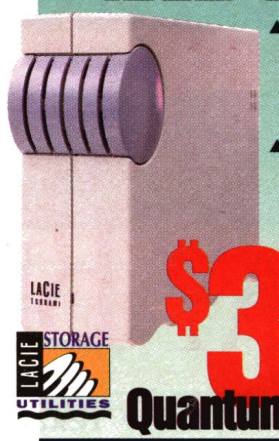
$888 Quantum Atlas 4.3 GB

3.5" Drives

850MB Quantum Trailblazer	3 yr. warr.	$189
1280MB Quantum Fireball	3 yr. warr.	$265
2160MB Ultrastar ES	5 yr. warr.	$469
4.3GB Quantum Atlas	5 yr. warr.	$888

Brackets available for $10 with internal hard drive purchase.

TSUNAMI HARD DRIVES



- Ready to plug and play with switchable active termination, cables, and La Cie Storage Utilities.
- Up to 4.3GB capacity in a 6.5"x8.5"x2.2" compact case.

$335 Quantum 1280 MB

850MB Quantum Trailblazer	3 yr. warr.	$259
1280MB Quantum Fireball	3 yr. warr.	$335
2160MB Ultrastar ES	5 yr. warr.	$569
4.3GB Quantum Atlas	5 yr. warr.	$989

POWER WIDE HARD DRIVES

- Utilize Wide-SCSI technology for high-speed, high capacity file transfer

FAST: 1 drives + 1 card
WRITE 7.0 MB/Sec
READ 7.7 MB/Sec

FASTER: 2 drives, 2 cards + RAID
WRITE* 13.0 MB/Sec
READ* 14.3 MB/Sec

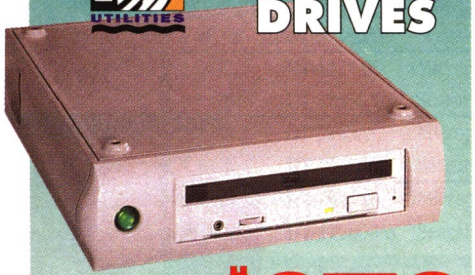
FASTEST: 3 drives, 3 cards + RAID
WRITE* 32.8 MB/Sec
READ* 27.0 MB/Sec

Power Wide External Drives

2.0GB Quantum Atlas Wide + Wide PCI Adaptec 2940 Board	NEW!	$1199
4.0GB Quantum Atlas Wide + Wide PCI Adaptec 2940 Board	NEW!	$1399
2.0GB Quantum Atlas Wide + RAID + Wide PCI Adaptec 2940 Board	NEW!	$1299
4.0GB Quantum Atlas Wide + RAID + Wide PCI Adaptec 2940 Board	NEW!	$1499

★ RAID Level 0 (Striped) For PCI Macs only

CD-R DRIVES



- Low cost media for backup.
- CD-Rs ship with Gear Multimedia software.
- Create your own CD with fast write capability.

$879 2X Recordable

CD-Recordables

2X Recordable with Gear MultiMedia	$879
4X Recordable with Gear MultiMedia	$1499
650 CD-R Disk 74 Minutes	10 Disk Pack $89

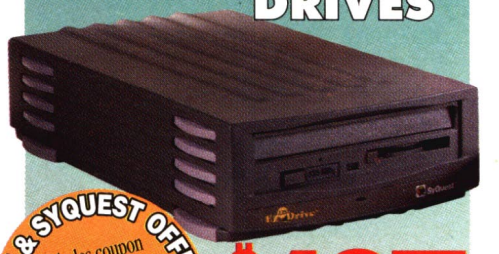
OPTICAL DRIVES

- Optical is the new standard in removable reliability.
- Available in two popular capacities.
- Compact storage convenience.

$1999 2.6GB Optical

	Powerbook	Internal	External
230MB 1 yr. warr.	$399	$389	$399
230MB Optical Cartridge			$19.95
2.6GB External 1 yr. warr.			$1999
2.6GB Optical Cartridge			$99

SYQUEST DRIVES

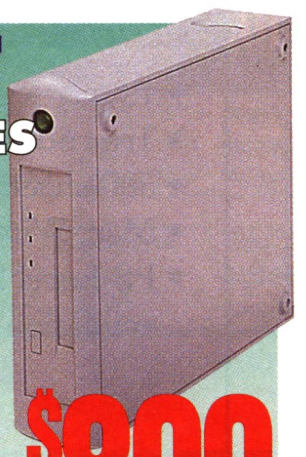


LA CIE & SYQUEST OFFER! Includes coupon for 2nd cartridge by mail for a total of 2 FREE cartridges! ($39.90 value)

$187 EZ135

EZ135MB Includes ONE FREE cartridge and coupon for 2nd FREE cartridge by mail!	2 yr. warr.	$187
270MB External		$279

DAT DRIVES



- The ideal medium for data backup.
- The cheapest backup solution per megabyte.

$899 8.0GB DAT DDS-2

DAT Drives Includes Retrospect

2.0GB DAT External	$699
8.0GB DAT DDS-2 External	$899
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DLT DRIVES

Maximum Storage Capacity Ideal for network servers and high-end work stations

- Transfer rates from 150 to 180 MB per minute.
- Flexible cache buffer automatically adjusts to slower host data transfer rates.

$2999 30.0GB DLT External

DLT Drives Includes Retrospect

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40.0GB Quantum DLT External	$4999

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Syquest SQ400 44MB	$38 ea.	$37 ea.
Syquest SQ800 88MB	$42 ea.	$41 ea.
Syquest SQ2000 200MB	$66 ea.	$65 ea.
Syquest EZ135 135MB	$18 ea.	$17 ea.
Syquest SQ3270 270MB	$54 ea.	$53 ea.
Optical 128MB	$23 ea.	$22 ea.
Optical 230MB	$25 ea.	$24 ea.
Optical 1.3GB	$59 ea.	$58 ea.
Optical 2.6GB	$99 ea.	$97 ea.
CD-R 74 650MB		$8.90 ea.
DAT 90m	$9 ea.	$8 ea.
DAT 120m	$20 ea.	$19 ea.
DAT Cleaning Kit	$9 ea.	$8 ea.
DLT 30 30GB	$40 ea.	$39 ea.
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Compare these features:

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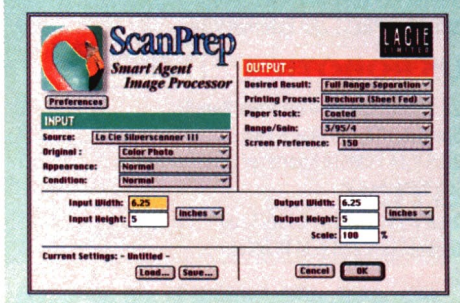
- The industry's leading scanning software.

"ScanPrep is an essential application if you own a scanner… the sort of program that has to be seen to be believed."
Ben Long – MacWeek
Highest Possible Rating

"No matter what acquired plug-in you get if you use Photoshop, you'll also want to buy a copy of ScanPrep."
– MacUser
Highest Possible Rating



ScanPrep automates Photoshop's image processing tools, individually preparing each image for printing right before your eyes. Simply describe the project to ScanPrep and scan the base image. ScanPrep yields professional prepress results, quickly and easily.

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24 bit color, 300 x 600 dpi interpolated to 1200 dpi.
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4

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▲ ScanPrep ▲ Silverscan
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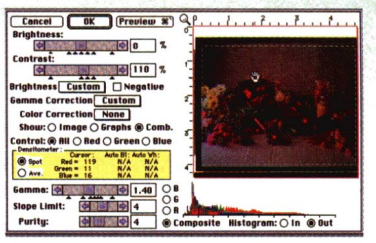
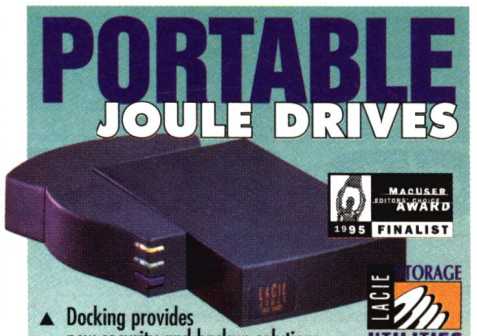


No matter which software bundle you choose, you'll also receive Silverscans' award-winning scanning software giving you professional scans.

PORTABLE JOULE DRIVES



▲ Docking provides new security and backup solutions.
▲ Share hard disk-sized files with diskette convenience.
▲ Unplug and go for convenient data transport.

Joule 3.5" Drives with Dock

850MB Quantum Trailblazer	3 yr. warr.	$329
1080MB Quantum Fireball	3 yr. warr.	$369
2160MB Ultrastar ES	5 yr. warr.	$669
8.0GB DAT DDS-2	Includes Retrospect	$959
8.0GB TURBO DAT DDS-2	Inc. Retrospect	$1159
230MB Optical	1 yr. warr.	$499

TOWER JOULE DRIVES

3.5" Drives with Mount — For use in Tower with a Joule Base

850MB Quantum Trailblazer	3 yr. warr.	$329
1080MB Quantum Fireball	3 yr. warr.	$369
2160MB Ultrastar ES	5 yr. warr.	$669
4.3GB Quantum Atlas	5 yr. warr.	$1099
8.0GB DAT DDS-2	Includes Retrospect	$959
8.0GB TURBO DAT DDS-2	Inc Retrospect	$1159
230MB Optical	1 yr. warr.	$499

Joule Bases – Supports Stacks Up To 6 Drives High

850MB Quantum HD	3 yr. warr.	$389
1080MB Quantum HD	3 yr. warr.	$429
2160MB Ultrastar ES HD	3 yr. warr.	$699
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CLEARANCE

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Hard Drives	PRICE	QTY.
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120MB Quantum Int. (unformatted)	$62	19
170MB Quantum Int. (unformatted)	$69	15
210MB Quantum Internal	$79	8
240MB Quantum Int. (unformatted)	$89	4
540MB Quantum Internal	$149	54
1.2GB 5.25" External	$549	5
2.1GB Seagate Internal	$529	8
2.2GB Quantum Internal	$529	23

Removable Drives	PRICE	QTY.
88MB SyQuest Int. (unformatted)	$139	7
105MB SyQuest Int. (unformatted)	$89	67
105MB SyQuest External	$139	14
155MB Teac Tape Int. (unformatted)	$49	53

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TSUNAMI HARD DRIVE
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16MB 70NS	455

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8MB 72PIN $145

72-pin SIMMs

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8MB 70/60NS	145/147
16MB 70/60NS	299/301
32MB 60NS	596

72-pin, 36 bit PC SIMMS

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32MB 70NS/60NS EDO	979/636

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PB500 Series

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16MB/32MB RAM	499/820

4MB PAL SIMMs for II,IIx

4MB 70NS	$129

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1MB 80/70NS	$43/43
4MB 80/70NS	155/155
8MB 70NS	349
16MB 70NS	520

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16MB 60NS	289
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PB DUO-8MB	299
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PB DUO-14MB	549
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What type of Memory do I need?

Standard 30-Pin Simms:
Plus, SE, SE 30, Classic, Classic II, Color Classic, LC, LCII, Performa 200, Performa 400-430, Performa 600, Quadra 900/950, Mac II, IIx, IIcx, IIsi, IIci, IIfx, IIvx, IIvi.

Standard 72-Pin Simms:
Quadra 605/630, 610, 650, 700, 800/840AV, LCIII, LC475, LC630, Performa 450-560, 575 and 6115CD, PowerMac 6100, 7100, 8100, WS 80, WS60, WS 95, WS 6150 and WS 8150, 9150.

168 Pin Dimms:
PowerMac 9500, 8500, 7500, 7200

PowerMac Memory Selection Guide

PowerMac 6100

(8MB) Standard 72-pin SIMMS

To upgrade your RAM to:	You need to order:
16MB	(2) 4MB 70/60NS
24MB	(2) 8MB 70/60NS
40MB	(2) 16MB 70/60NS
72MB	(2) 32MB 60NS

PowerMac 7100, 8100

(8MB) Standard 72-pin SIMMS

To upgrade your RAM to:	You need to order:
16MB	(2) 4MB 70/60NS
24MB	(2) 8MB 70/60NS
40MB	(2) 16MB 70/60NS
72MB	(2) 32MB 60NS
136MB	(4) 32MB 60NS
264MB (7100 only)	(8) 32MB 60NS

PowerMac 9500, 8500, 7500

(16MB) Standard 168-pin DIMMS

To upgrade your RAM to:	You need to order:
32MB	(2) 8MB 70NS DIMMS
48MB	(2) 16MB 70NS DIMMS
80MB	(2) 32MB 70NS DIMMS
144MB	(2) 64MB 70NS DIMMS

PowerMac 7200

(8MB) Standard 168-pin DIMMS

To upgrade your RAM to:	You need to order:
24MB	(2) 8MB 70NS DIMMS
64MB	(2) 16MB 70NS DIMMS
128MB	(4) 32MB 70NS DIMMS
256MB	(4) 64MB 70NS DIMMS

FPUs/CoProcessors Video RAM

FPU's/Math CoProcessors

Centris FPU 25MHz	$189
FPU 33MHZ DUO/P600	52
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FPU LC/LCII 16 MHZ	49
LC575 33MHZ Math CoProc.	285

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1MB Cache Card	792
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TDK

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Motorola

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Power 28.8 V.34	270
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Cruise Card 28.8	295
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PowerPro 601 100MHZ w/cache	1240
Turbo 601 100 MHZ w/adapter	1175
PowerCard 601 100MHZ	959

SONNET

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Quad Doubler 40MHZ w/FPU Centris 610	345
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Quad Doubler 50MHZ w/FPU Centris 650	390
Quad Doubler 50 MHZ Centris 660AV/7/900	390

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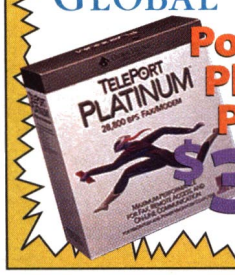

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- 10 Pack 190.00

The Original SyQuest Cartridge

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media HABITAT

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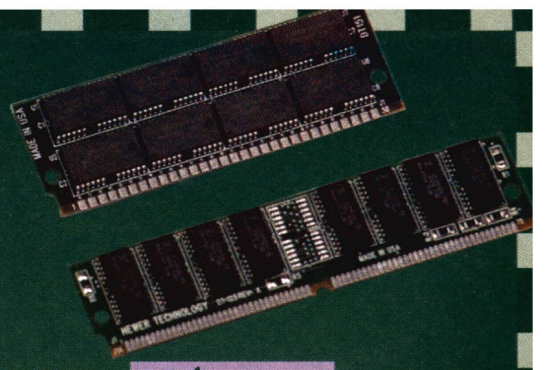

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SuperMac Spectrum 8	IIsi	256	256	256	256
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Video Card	Platform	Monitor (Colors) 14/15"	16/17"	19/20"	21"
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SuperMac Superview	Mac SE	–	–	Mono	–
Radius TPD Interface	Mac SE	–	–	–	Mono
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SuperMac Spectrum 8	LC/PDS	256	256	256	256
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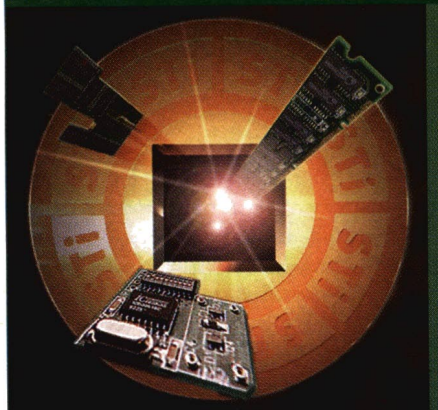

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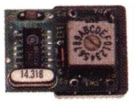

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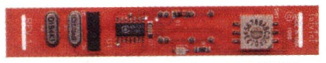

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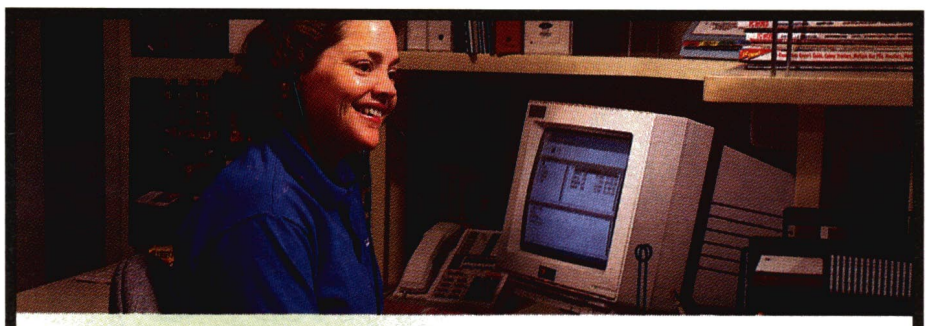

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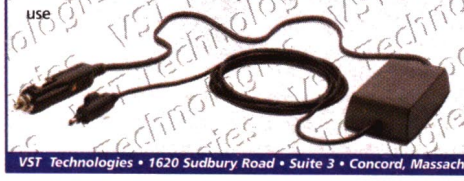

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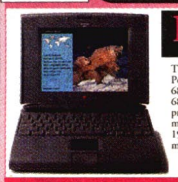

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The PowerBook 540c is one of Apple's top of the line color PowerBook computer, combining the high performance Motorola 68LC040 processor with an active matrix color display • It has 68LC040 processor running at 66/33 Mhz. upgradable to PowerPC processor • Built in ethernet and video out port supporting most Apple monitor display. 4 Mb of RAM expandable to 36 MB • Optional 19.2bps Global Village fax modem• High capacity Type II nickel metal hydride • Weight : 7.3 lbs

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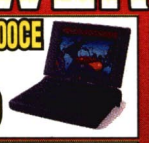

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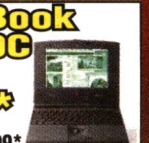

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StyleWriter 1500	$ 279.
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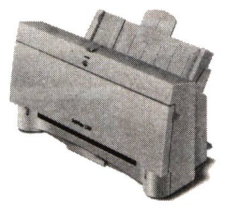

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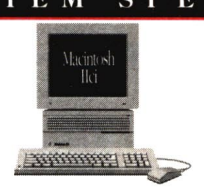

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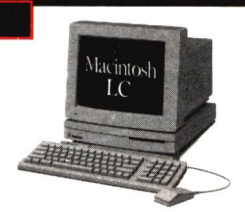

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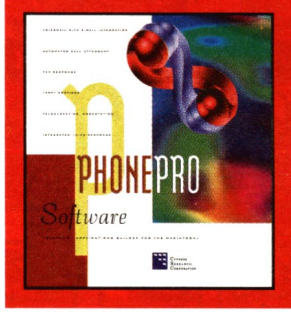

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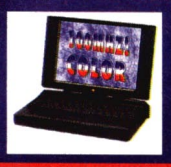

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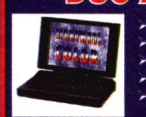

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SPECIAL OFFER!
7200/75 8/500/CD FOR ONLY $899
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8MB	139.	129
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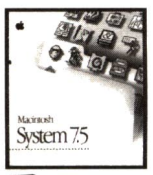
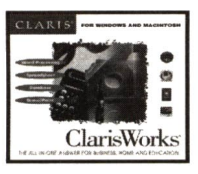
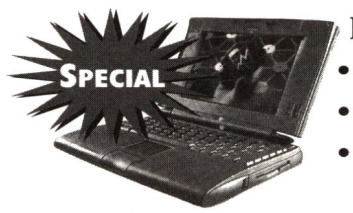




$99 Bundle
- System 7.5 CD
- ClarisWorks 3.0 CD
- internal 1/2 height 160MB HD
- Global Village Bronze modem

IIsi 5/160
$549
MONITOR, MOUSE AND KEYBOARD
includes ClarisWorks bundle



PowerBook 520c
- 4/240, 25MHz LC040
- DUAL SCAN COLOR
- FACTORY REFURBISHED

$1399

We take trades on PowerBooks!
call (318) 424-9791

MACINTOSH SYSTEM 7.5 CD .....25.
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Macintosh Logic Board Upgrades

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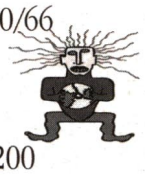
Mac II or IIx to IIfx (with RAM swap)	exchange $299
Centris 610 to Quadra 660AV	exchange $299
Quadra 660AV TO PowerMac 6100/60	exchange $499
Quadra 800/840AV to PowerMac 8100/80	exchange $999
Quadra 800 to Quadra 840AV	exchange $299
Quadra 650 to PowerMac 7100/66	exchange $699
LC550 to LC575	exchange $499
IIvx or IIci to Centris 650	exchange $299
Performa 630 to PowerMac 6200	exchange $699



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Brand New! Original Packaging!
1-Year Apple Warranty

FACTORY REFURBISHED
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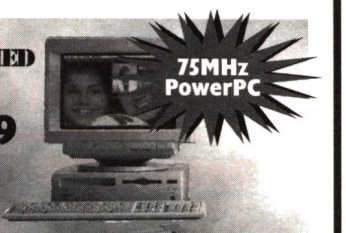
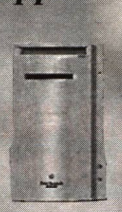
8/1GB/CD **$999**
monitor & keyboard sold separately



Quadra 840AV 0/0
$1099
refurbished



Color StyleWriter 2400
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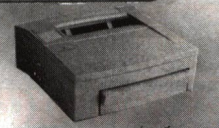
$50 Instant Rebate if purchased with a system!



LaserWriter 4/600PS
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$799 new
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Performa 6100 8/500/CD	$799.
Centris 650 4/0	$649.
Quadra 605 4/160 NEW	$679
Quadra 660AV 4/0	$649.
Quadra 840AV 0/0	$1099.
Quadra 800 8/0	$1099.
Quadra 950 8/500 NEW	$1499.
PowerMac 5200/75LC 8/500/CD	$1399.
WGS 9150 16/1G/DAT	$2599.

TOO MANY CPU'S TO LIST - CALL US!

FACTORY REFURBISHED

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630 Series Card Specials

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IIsi NuBus Adapter	$99.
Bernoulli 90PRO external	$89.
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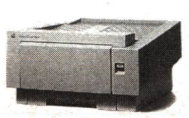

Personal LaserWriter LS
REFURBISHED ***$249***
NEW ***$349***
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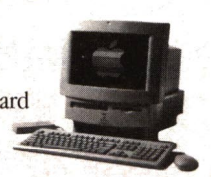
Performa 578
- 8/320/CD
- complete with ext. keyboard
- BIG software bundle

$1199 NEW



Video Cards

Apple 8-bit Card	$99.
RasterOps 24MX	$199.
RasterOps PaintBoard Turbo new	$299.
E-Machines DoubleColor SX new	$149.
SuperMac PDQ 8•24	$349.
7100/8100 series AV Card	$499.
6100 series AV Card with adapter	$599.
PowerMac HPV VRAM Card	$299.

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Apple 14" Trinitron	$269.
Apple 15" MultiScan	$329.
Apple 21" Color	$1199.
RasterOps Sweet 16	$599.
*Hewlett-Packard 17" with card	$649.
*Hewlett-Packard 20" with card	$899.
Radius TPD 19" mono	$399.
Radius TPD 21" mono	$549
Radius PrecisionColor/20	$1199.
Radius Color Display/21	$1299.
Radius PrecisionColor Pivot	$549.
RasterOps GDM-1950 20"	$849.

Printers

Apple StyleWriter 1200	$179.
Apple Personal LaserWriter LS	$249.
Apple Personal LaserWriter 300	$299.
Apple Personal LaserWriter NT	$599.
Apple Personal LaserWriter NTR	$699.
Apple LaserWriter IINT	$699.
Apple LaserWriter IINTX	$899.
Apple LaserWriter Pro 630	$1199.
Apple LaserWriter 4/600PS	$649.
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Hewlett-Packard DeskWriter	$199.
Hewlett-Packard DeskWriter C	$219.
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PowerBook 520 SALE top of page!

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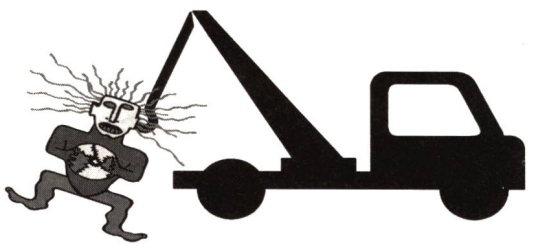

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***POWERBOOK TRADE-INS:** working units only, minimum 4/80 configuration

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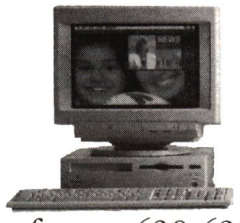
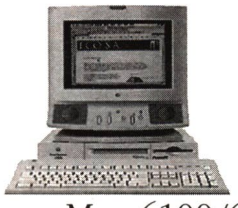


Performa 630-635

- factory refurbished
- 25MHz MC68LC040
- 5MB RAM
- 250MB hard drive
- 2X Apple CD300i
- AppleDesign Extended Keyboard
- 14" Performa Plus Display
- Global Village Bronze Faxmodem

$999.00
- $500 TRADE-IN
YOUR COST $499



PowerMac 6100/60
pictured with 14" AV

- factory refurbished
- 60MHz PowerPC™ 601
- 8MB RAM
- 350MB hard drive
- 2X Apple CD300i
- AppleDesign Extended Keyboard
- 14" Performa Plus Display
- Global Village Bronze Faxmodem

$1199.00
- $500 TRADE-IN
YOUR COST $699

Performa 6200/75

- factory refurbished
- 75MHz PowerPC™ 603
- 16MB RAM
- 1GB hard drive
- 4X Apple CD600i
- AppleDesign Extended Keyboard
- 15" Apple MultiScan Display
- Global Village Bronze Faxmodem

$1699.00
- $500 TRADE-IN
YOUR COST $1199

PowerMac 5200/75LC

- factory refurbished
- 75MHz PowerPC™ 603
- 8MB RAM
- 500MB hard drive
- 4X Apple CD600i
- AppleDesign Extended Keyboard
- 14" Apple Display
- Global Village Bronze Faxmodem
- Built-in speakers

$1399.00
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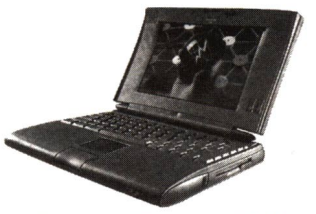
YOUR COST $899

SHREVE Systems



PowerBook 520

- factory refurbished
- 25MHz MC68LC040
- 4MB RAM
- 240MB hard drive
- 4-bit gray, passive matrix
- maximum RAM: 36MB
- 16-bit stereo sound output

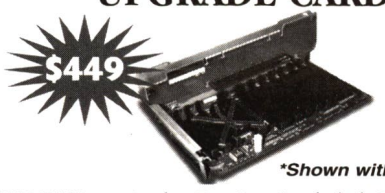
PRE-LOADED SOFTWARE:

- System 7.5
- ClarisWorks 3.0

$949.00
- $400 TRADE-IN
YOUR COST $549

Specials Specials Specials

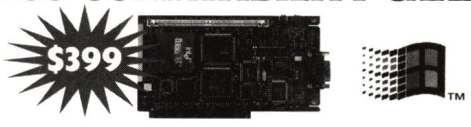
POWER MACINTOSH UPGRADE CARDS



*Shown with PDS adapter

8MB RAM required • For Quadra 610, 650, 700, 800, 900, 950, Centris 610 & 650 • Up to 66MHz
DEMO UNITS

DOS COMPATIBILITY CARD



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Trade-in your working B&W Apple printer for this incredible price!
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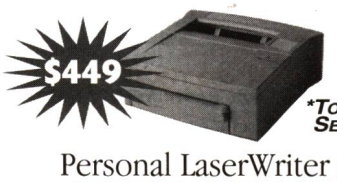
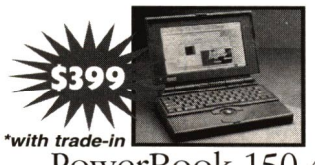


*TONER SOLD SEPARATELY

Personal LaserWriter 320
FACTORY REFURBISHED



*with trade-in

PowerBook 150 4/240
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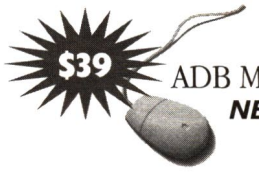
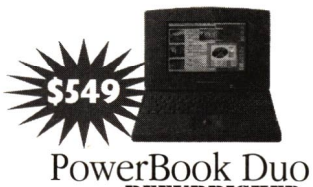
WORKING POWERBOOKS WITH MIN. 4/80

Apple QuickTake 150
REFURBISHED

Curtis MVP Mouse
NEW



ADB Mouse II
NEW



PowerBook Duo 230
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RAM O' RAMA

•1MB 30-PIN: $10
•2MB PAL: $39

Great for older Macs!

Hewlett-Packard DeskWriter
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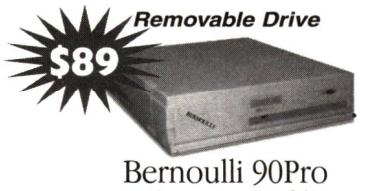
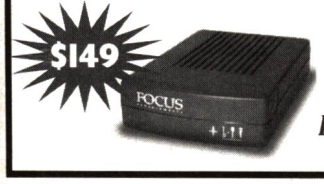


Bernoulli 90Pro
Transportable
REFURBISHED



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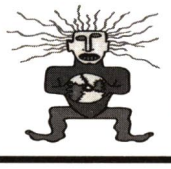
L•TV Portable Pro is an external scan converter that allows any Macintosh with a video port to use a standard TV monitor as a display device (and/or a VCR as a recording device). It converts the computer image from an RGB video signal to a standard NTSC signal.



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APPLE 20" Multi	$1699
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APPLE SW 1200	$199
APPLE SW 1500	$299
APPLE SW 2400	$310
APPLE SW 2500	$379

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UMAX Vista S8 w/Full Photo	$749
AGFA StudioScan IIsi	$847
AGFA Arcus II w/Full Photo	$1880
PaperPort Vx By Visioneer	$359

DEMO

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Q840AV 8/230/CD	$1090
Q650 8/230/CD	$890

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8100/110 LogicBoard	$1450
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7500/100 16/1Gig/CD	2245.
7600/120 16/1 Gig/CD	CALL
8100/100 16/700/CD	2585.
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9500/120 16/1Gig/CD	2750.
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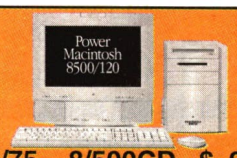

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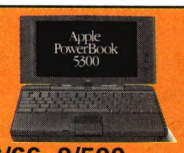

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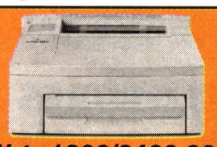

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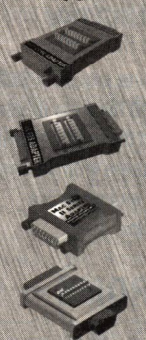

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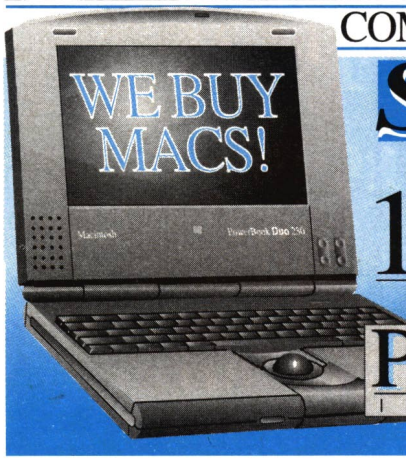

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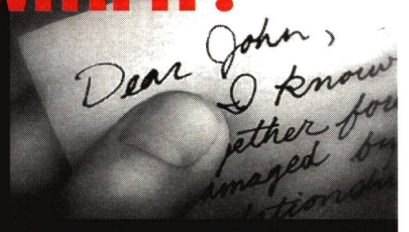

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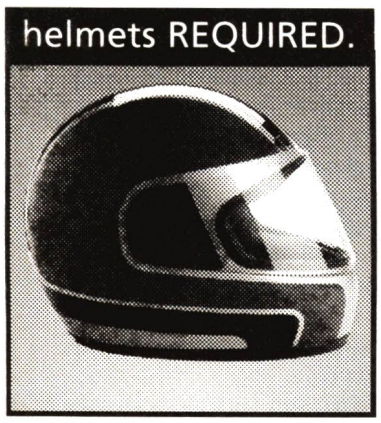

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Classified

Canvas

From Page 1

plications since the initial public offering of Netscape Communications Corp. in August, he said.

"[July] supersedes all previously published release dates," Menéndez wrote in a letter recently posted on the company's Web site.

But some users may no longer care when Canvas 5 ships. "This is the worst case of missing the boat for schedules I've seen in a long time," said one source, who added that Menéndez's explanation seemed like an excuse to delay the release even further. "If you didn't realize that the Web was going to be important until a few months ago, where have you been?"

Delays aside, the product's integrated capabilities are attractive as well as unnerving to many users.

Andrew Rodney, a beta user based in Santa Fe, N.M., said he is pleased with the expansion of Canvas 5 into other graphics niches. "It is the ClarisWorks or Microsoft Office of graphics packages," he said.

The source, however, said he was concerned about the addition of so many new features. "I'm afraid the next version is going to be similar to [Microsoft] Word 6.01," the source said.

Canvas will now include built-in anti-aliased GIF89 and JPEG file filters and direct support for Portable Document Format files. Users will be able to import HTML pages, but the company would not confirm or deny that Canvas 5 will create Web pages.

In addition, the program will include a PostScript interpreter that will convert any EPS file, including those created by printer drivers and desktop publishing programs, into Canvas objects.

Other features include:

- **Design.** Canvas 5 will offer a range of new design tools, including a floating Graphic Styles palette that will let users name and re-use design elements.

Users will be able to apply an Ink, which can be a color, gradient, texture, hatch or symbol, to strokes, fills and text. The floating Inks palette will let users pick and create Inks, which can be imported from other documents.

Canvas 5 will let users directly select and edit objects within groups and drag and drop objects between documents. A floating master palette will offer real-time feedback on object attributes.

Users will be able to select calibrated CMYK colors from a digital swatch book and fine-tune color blends with the Gradient Vector tool.

- **Image editing.** Canvas 5 will add significant image-editing and photo-retouching features, such as a Quick Mask command that will let users create, view and edit masks directly on an image, and a Magic Wand tool that will perform automatic color-range selection.

Version 5 also promises compatibility with Adobe Photoshop plug-in filters.

- **Typography.** The floating Type palette will let users control font and paragraph settings. On-screen controls for editing text and graphics will allow users to type text directly on any curve or shape.

"The text-handling is far more superior and robust than anything you can find in Photoshop," beta user Rodney said.

Canvas 5 users will be able to create new documents with an array of professionally designed templates. The upgrade will include several new transition effects between presentation slides.

Jay R. Fader, a beta user based in Brooklyn, N.Y., said, "[Canvas 5] is very complex, very powerful, yet you don't need to be a powerful user."

Fader said he thinks Deneba will be able to ship by the July 1 deadline. "What I have here is fully functional," he said. "When [Deneba products] come out, they're solid. It's not a half-baked program."

The upgrade will be available for Power Macs and 680x0-based Macs as well as Windows 95 and Windows NT systems. Upgrades will be free to users who purchased Version 3.5 after July 1, 1995. To others, upgrades will be $99 for the first 60 days and $149.95 thereafter. Competitive upgrades will also be $149.95.

Deneba Software of Miami can be reached at (305) 596-5644; fax (305) 273-9069; sales@deneba.com; http://www.deneba.com/. □

Palette of features for Canvas 5

DESIGN

- Path-editing shortcuts: Punch, mix and transparency
- Direct editing of objects within groups
- Calibrated CMYK colors from digital swatch book

ILLUSTRATION

- Precision to 0.5 micron
- Magnification levels between 3 percent and 3,200 percent

IMAGE EDITING AND PHOTO RETOUCHING

- Brush, Airbrush, Neon Brush and Marker tools with fade effects
- Retouching tools: Smudge, Sharpen and Blur
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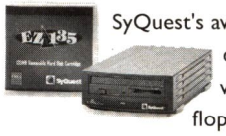

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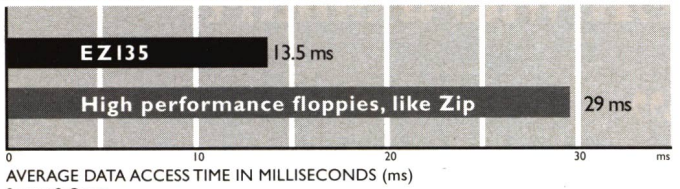

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Internet World

From Page 1

SoftQuad Inc. will show the Windows version of HoTMetaL Pro 3.0; the Mac version is slated for release in June. New features include a WYSIWYG display, an editor for Navigator frames, support for Shockwave and Java applets, as well as many new templates. Upgrades for the $179 Mac package will be $49.

Adobe Systems Inc. will demonstrate PageMill 2.0, which is due this summer (see 04.22.96, Page 8). The company will also announce changes in Acrobat 3.0 that will yield smaller Portable Document Format files. Acrobat 3.0 will mark a switch from internal LZW compression to ZIP for text and line art, which should reduce the size of these elements by about 25 percent.

Specular International Ltd. will demonstrate 3D Web Workshop, a $399 Web design and layout suite. Due to ship in May, the bundle will include the company's LogoMotion and TextureScape as well as Adobe PageMill and a collection of Web-oriented 3-D graphics (see 03.04.96, Page 1).

▶ **Clients.** Apple won't be entirely silent at the show; sources said the company plans to announce an alliance with Netscape Communications Corp. and IBM Corp. that will broaden the appeal of QuickTime Conferencing. Furthermore, Apple will reportedly show a Navigator plug-in for its teleconferencing technology.

Alis Technologies Inc. will show Tango, a polyglot Web browser based on Spyglass Inc.'s Enhanced Mosaic that is due on the Mac this summer. The company said Tango users will be able to switch among English and 74 other languages.

Farallon Computing Inc. will ship the $549 Netopia ISDN modem, a single-user, dual-channel ISDN (Integrated Services Digital Network) terminal adapter. It will show FlashNote, a miniature e-mail package due this summer, as well as Look@Me, a free Timbuktu-based applet that lets a user observe another user's screen over the Internet.

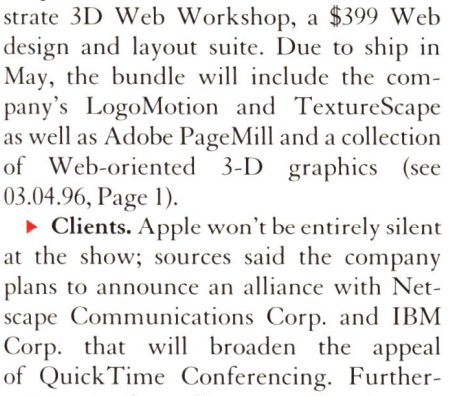
White Pine Software Inc. will ship Enhanced CU-SeeMe 2.0, the company's $99 Internet teleconferencing application. The new version will be optimized for Open Transport, function in color and provide a whiteboard with integrated text chat.

Sprynet, CompuServe's Internet Division, will ship a Mac client for its Internet service. Members will receive the SpryMosaic and Microsoft Corp. Internet Explorer Web browsers; NCD Software Inc.'s ZMail, an e-mail client; FreePPP; Sprynet Ramp, a connection and setup tool; and Sprynet Dialer.

VocalTec Ltd. will demonstrate Internet Phone 4.0, a forthcoming update to its voice-communications product. The new version, due for the Mac later this year, will let users conduct up to four different conversations at once, leave voice messages for people not currently connected, transfer files along with voice transmissions, trade text messages in a chat window and collaborate on documents while talking.

▶ **Servers.** Quarterdeck Corp. and InterCon Systems Corp. will demonstrate the latest versions of their Internet servers, WebStar and InterServer. Maxum Development Corp. will be in Apple's booth demonstrating Rush Hour 1.1, the latest version of its Web graphics server. All three servers are now optimized for Open Transport.

Progressive Networks Inc. will show Version 2.0 of RealAudio, which shipped in March. The new system, which consists of a server and free player, includes fire wall support and improved sound and music quality. RealAudio Server 2.0 lets Power Macintoshes serve streaming sound content. □



Code-named Fireball, Specular's 3D Web Workshop lets users drag textures and objects into Adobe PageMill.

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eXodus
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Mac OS

Navigator

From Page 1

mance and multimedia.

Version 3.0 will implement Netscape's forthcoming Enterprise Kit, which will let IS managers customize Navigator and lock down client preferences. For example, administrators will be able to set their users' home page to one inside the corporate fire wall and hide proxy and server settings.

"This is the kind of control IS managers have been asking for," said Gary Arlen, president of market research firm Arlen Communications Inc. of Bethesda, Md.

Further security enhancements will come through digital certificates and Version 3.0 of Secure Sockets Layer (SSL). These will provide client authentication and better encryption of the network connection. SSL's protection will also be extended to cached files to keep secure information on the client computer safe from hackers.

Two changes will be made to Navigator's local cache that should speed delivery of Internet graphics. First, Navigator 3.0 will be able to pull graphics off a local CD-ROM before looking to the Web for a page's images. Second, if a user leaves a Web site before its graphics are fully downloaded, the browser will save the partially downloaded images and pick up where it left off when the user returns to the page.

Arlen said the CD-ROM support will give Netscape and other companies a chance to sell space on disc-based titles and let companies provide more-graphical versions of their sites without hitting bandwidth limitations. Arlen said this function could be positive for emerging network computers such as Apple's Pippin, which lacks a hard drive.

"For interactive titles with online access this is a no-brainer," said David Ludlum, research director at IDC/Link of New York.

Netscape will also debut its new LiveMedia architecture with three plug-ins for Navigator 3.0 that will support Virtual Reality Modeling Language (VRML), QuickTime and AVI movies, and various sound formats.

Navigator's multimedia experience will further improve with Sun Microsystems Inc.'s Java and Netscape's LiveConnect, an interactive layer that lets Java applets, Netscape plug-ins and JavaScript scripts interoperate and control one another (see 04.01.96, Page 14). Netscape will debut a new set of Java classes for LiveConnect; plug-in developers will need to update existing plug-ins to support the new communications layer.

Internet telephony and whiteboard capabilities will be offered in the Windows version of Navigator 3.0; they will come to the Mac in Version 4.0.

Version 4.0 of Navigator, expected in the second half of 1996, will display many graphical and video file formats while data is streaming from the server. This version will also incorporate Apple's QuickTime Conferencing technology.

Netscape Communications Corp. of Mountain View, Calif., can be reached at (415) 538-2555; fax (415) 528-4140; http://home.netscape.com. □

WWDC

From Page 1

will not be abandoned, and that the goal of DR1 is to let developers test the compatibility of their existing applications with Copland. "For this particular release ... the goal is to make sure the compatibility APIs were there," he said. "From a quality point of view it has got to be relatively stable."

Salvaggio said the re-evaluation of Copland affected the OS' end-of-1996 ship date. "We believe today that we could project roughly a mid-'97 time frame" for the final customer release of Copland, he said.

Heidi Roizen, Apple vice president of developer relations, said the delay will allow the company to align Copland with the market. "I don't know why anyone would ship an OS in December anyway," Roizen said. "Whose sales cycle is that?"

Developers had been looking forward to getting their hands on Copland at next month's conference in San Jose, Calif.

"DR1 at WWDC is a symbolic thing," said Marshall Clow, a software engineer for Aladdin Systems Inc. of Watsonville, Calif. "Even if developers get it by Federal Express on the Monday after WWDC, it is different than being handed a CD at the conference. They shouldn't be, but people will be disappointed."

Will Iverson, Macintosh developer relations manager for Symantec Corp. of Cupertino, Calif., agreed Apple needs to enunciate its Copland plans at WWDC, but he added, "It won't kill the platform if DR1 slips."

The delay won't hurt Symantec's tool sales either, he said. "Although Copland is obviously a critical technology, to a certain extent, Java is saving our bacon."

Programming-tools vendors and other key Mac developers received the initial developer release, DR0, in January.

Developer releases are important to Corel Corp. of Ottawa, said Ken Freeman, product marketing manager for WordPerfect for Macintosh. "We anxiously

See WWDC, next page

On Demand

From Page 1

Adobe merely hinted at some future Internet-based, distributed-printing products while showing off the latest refinements to Supra, its on-demand production-printing architecture.

According to sources, Adobe in May will announce its first Internet printing package. Code-named PrintMill, the software will provide a Web browser interface to link users to remote printer servers.

Sources said the system will support a CGI (Common Gateway Interface) that will let users automatically print MIME (Multipurpose Internet Mail Extensions) enclosures to connected PostScript printers. The Web browser will let users fill out forms to pay for jobs with credit cards and comparison shop.

Sources said the product will represent the first generation of an architecture that will connect Internet users with Supra and a Web-savvy version of Adobe's proprietary client-server Virtual Network servers (see 10.09.95, Page 18).

Supra, which Adobe unveiled at Seybold Seminars Boston 96 in February, is endorsed by several dozen vendors. It handles both PostScript and Portable Document Format (PDF) files; supports high-speed printing via parallel RIPs; and offers job-control features, such as ticketing, finishing and authentication.

Like Virtual Network, the forthcoming architecture will run on Unix-based servers that ticket jobs and route files to the RIP, sources said. The system will use PDF extensions for a variety of print-on-demand features, such as security and color matching.

Besides large corporations, Adobe hopes the architecture will attract graphic arts professionals. In a related move, Adobe recently received a boost to PDF's prepress capabilities. The Committee for Graphic Arts Technologies Standards recently selected PDF as the vehicle for TIFF/IT images (see 10.30.95, Page 12).

According to sources, Adobe's comprehensive Internet strategy will also attempt to speed desktop printing of Web pages.

Adobe declined to comment on its Internet printing plans.

At the show, Adobe and other vendors laid out plans to expand the on-demand and distributed-printing markets.

The trio of Apple, Adobe and Scitex America Corp. announced a new program to push short-run document printing. The Print on Demand Initiative seeks to educate corporate customers, value-added resellers and OEMs about new applications for short-run printing and to assist with marketing muscle.

As part of the rollout, Scitex provided a demonstration of "variable-data technology," which will let Mac users create complex electronic forms that can be overlaid with a variety of data. The system supports rules for swapping out text and images and represents rules as icons that can be dragged and dropped into fields or frames.

In the demonstration, jobs were sent to Scitex's $199,000 Spontane digital press. Scitex said it expects to ship specialized versions of the system later this year.

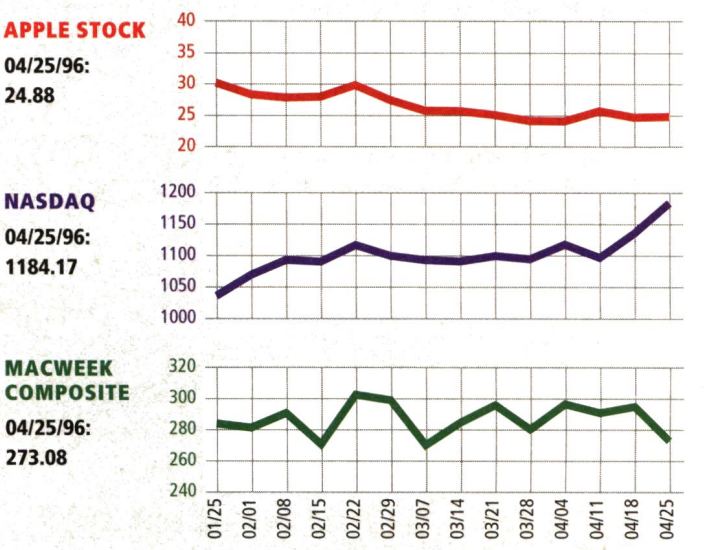
Xerox Corp. chimed in with a new high-speed color digital press and several products aimed at print-on-demand and distributed printing.

The company's DocuColor 40 Digital Color Production System costs about $130,000. It has a resolution of 400 by 400 dpi and accommodates tabloid-size sheets. Xerox said the unit can output up to 40 single- or 30 double-sided CMYK letter-size pages per minute.

Xerox also introduced its $2,399 Digital Document Connection with Launch!, which offers remote printing to service bureaus. The proprietary client software compresses files automatically and sends print jobs via point-to-point modem connections; it supports Mac and Windows clients.

The company also unveiled a new version of DocuWeb, its client-server document-management system, and Document Assembler, $100,000 software that can create and manage large documents, such as 500,000-page drug-approval submissions. □

StockWatch



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NASDAQ	1184.17	47.87

**The MacWEEK Composite is calculated by adding the stock prices of the following companies: Apple, Adobe, Asanté, Caere, CE Software, Global Village, Intuit, Macromedia, Radius, Shiva, SyQuest and Truevision. Source: Nordby International Inc.*

WWDC

From previous page

await every release they have," he said. But Corel is still evaluating Copland's features and has not tightly tied future product plans to Apple's OS schedule.

"We sell to the installed base, so the release of Copland — as a desktop OS — doesn't have much effect for us," said Scott Welch, vice president of SoftArc Inc. of Markham, Ontario. Faced with the prospect of delays, Welch said: "Frankly we'd rather Apple ship a good product. They're competing against the best software developer in the world, and even Microsoft Corp. slips."

Aladdin's Clow said: "More than anything, DR1 needs to be reasonably stable. Information about which APIs are frozen ... would be nice, but without stability, people will put it on their machines and then take it off."

Apple said it will freeze several Copland APIs in DR1.

"Apple froze some APIs to ensure that the next major version of Microsoft Office will run under Copland," said Dave Meltzer, group product manager for Macintosh applications at Microsoft.

Meltzer said Microsoft is not reliant on Apple's plans. "We try very carefully not to introduce dependencies on third parties."

Jorg Brown, lead development engineer at Connectix Corp. of San Mateo, Calif., was sanguine about the delay. "I don't think of the delay as a delay," he said. "I never believed the reports [that] it would ship in 1996." □

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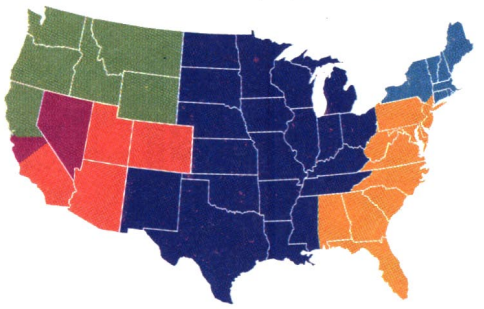

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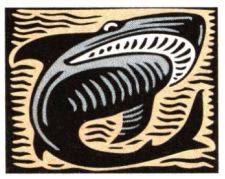

Spelunking the heart of darkness

In an apparent homage to famed Greek vagrant Diogenes, the Knife this week finds himself wandering through the dark night of the industry's soul, waving his childproof lighter above his head like a rabid Styx fan and searching desperately for an honest Mac application.

Perhaps unsurprisingly, the Knife is catching nary a glimmer from Microsoft, which appears to be spinning faster than Linda Blair's head over development delays to the next rev of its Office suite. Clasping his penlight firmly between his teeth while riffling through some select file drawers, the Knife took the opportunity to peruse a few terse memos that have been wending their way through the Dark Empire.

Seems the Wintel version of Office has been pushed back to October; until that date, personnel assigned to the Mac version have been redeployed to help in the Windows effort. The vestigial Mac team's standing orders are to fix major bugs but refrain from any actual development until the Windows version ships.

Now, the Knife would *never* characterize Microsoft as chutzpah-impaired, even on the best of days. Nevertheless, in light of earlier rumors (since confirmed) about Apple freezing Copland APIs explicitly to satisfy the Office team, this latest move may approach a career high for the Darth Vader of software development.

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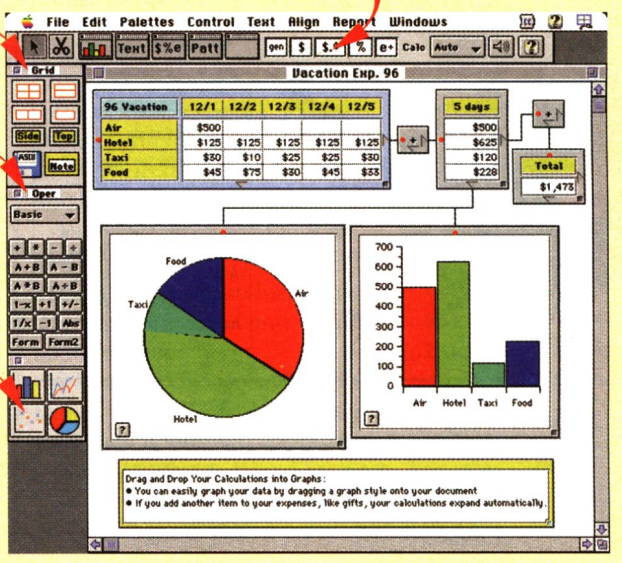

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Et tu, Corel?

Meanwhile, the Knife casts a suspicious eye toward the frozen north, where the fickle Ottawans at Corel continue to inspire limited confidence in Canada's commitment to the Mac platform.

Loyal readers will remember that last week's column included a tentative endorsement of Mac development efforts by Corel and its new U.S. colony, WordPerfect. However, one of the Knife's Francophone pen pals has sent him excerpts from a disturbing September 1994 interview with Corel CEO Michael Cowpland (absolutely no relation to the Apple OS).

According to the remarks, translated from Quebecois computer-industry periodical Info-Tech magazine, Cowpland didn't place much stock in a Mac version of CorelDraw. "I believe the Macintosh will suffer the same fate as Commodore's Amiga," he was quoted as saying. "With the convergence of operating systems and the release of [Windows 95], users aren't going to want to pay for the Mac's user-friendliness." *Sacré bleu,* Mike! Say it ain't so!

Thin blue line

Not every hoary old artifact in the Wintel attic is causing alarm *chez* Knife this week. As a matter of fact, IBM Microelectronics threatens to reaffirm the Knife's faith in entrenched corporate icons by actually setting a date for licensing the Mac OS. According to the Knife's East Fishkill connections, D-Day is set for next Monday.

Not dead yet

Contrary to rumors flying fast and furious around the Net, the Knife is pleased to report that consummate Mac sycophants Mitch Hall & Associates are not — repeat, *not* — laying off staff because of tepid vendor interest in August's Macworld Expo in Boston.

Even at this early date, 66 arguably masochistic new vendors have already joined the cadre of regulars destined for the sweltering Mac bacchanal, Apple has cadged additional space at the distant Bayside Pavilion (home of an expanded developer mosh pit), and Mitch Hall even has a couple of job openings. Perhaps some Apple castoffs not snatched up by Uncle Bill might like to work for Uncle Mitch? □

Allons, enfants de la patrie — le jour du Mac est arrivé! If you believe that, *you'll be delighted to shell out your tips at (415) 243-3544; fax (415) 243-3651; mac_the_knife@macweek.com.*

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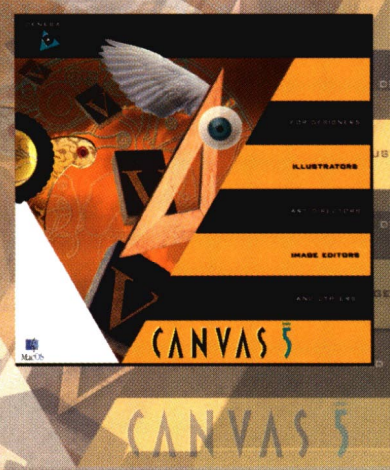

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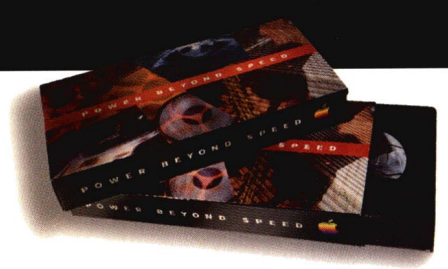

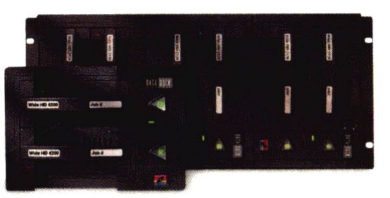

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